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**Traffic Injury Research Foundation**

***Alcohol Use Among Drivers and  
Pedestrians Fatally Injured  
In Motor Vehicle Accidents:***

***Canada, 1996***



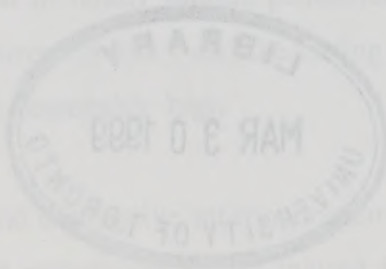
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## ABSTRACT

# **Alcohol Use Among Drivers and Pedestrians Fatally Injured In Motor Vehicle Accidents:**

**Canada, 1996**



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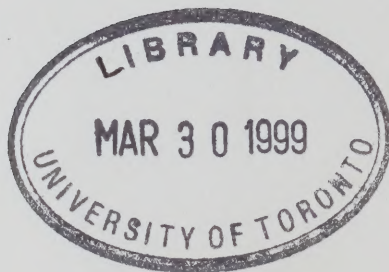
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**June 1998**



Alcohol Use Among Drivers and  
Pedestrians Fatally Injured  
in Motor Vehicle Accidents:

Canada, 1996



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## ABSTRACT

This report describes the conduct of a project to compile data on alcohol use by persons fatally injured in motor vehicle accidents occurring on or off public highways in Canada. Data are obtained from two sources: (1) police-reported information on the characteristics of the victim and details of the fatal motor vehicle accident; and (2) coroners' and medical examiners' files for objective, toxicological data from body fluid samples (mostly blood) on alcohol use among victims.

The primary focus of the report is on alcohol in fatally injured drivers because this group of road users is of greatest interest to traffic safety officials, and the rate of testing for alcohol is consistently higher among drivers than other groups of road users. A secondary focus is on alcohol in fatally injured pedestrians because walking on or by highways after drinking is extremely risky and the testing for alcohol especially among those over 16 years of age is reasonably high.

The report contains (1) general descriptive information on the frequency and quantity of alcohol found in drivers and pedestrians fatally injured in motor vehicle collisions in Canada during 1996 and (2) trends in alcohol detected among fatally injured operators of automobiles, motorcycles, trucks, vans, and tractor-trailers and among fatally injured pedestrians.

As well, data on alcohol use by fatally injured drivers are presented separately for each province and territory. General descriptive information on the incidence of alcohol among fatally injured drivers are first presented; then, trends in alcohol involvement among fatally injured drivers are examined.

An historical overview of the Fatality Database Project and a more detailed description of the design of the project are provided in an Appendix.





# CONTENTS

<b>ACKNOWLEDGEMENTS</b> . . . . .	v
<b>1.0 THE FATALITY DATABASE PROJECT:</b> . . . . .	1
1.1 Overview and Purpose . . . . .	1
1.2 Scope of Report . . . . .	1
<b>2.0 DESCRIPTION OF THE FATALITY DATABASE</b> . . . . .	3
2.1 Overview . . . . .	3
2.2 Number of Victims: 1987-1996 . . . . .	3
2.3 Type of Victim . . . . .	4
2.4 Testing Rates for Alcohol . . . . .	5
<b>3.0 CANADA</b> . . . . .	13
A. Alcohol Use Among Fatally Injured Drivers . . . . .	13
3.1 General Findings . . . . .	13
3.1.1 Age Differences . . . . .	14
3.1.2 Gender Differences . . . . .	15
3.1.3 Vehicle Differences . . . . .	16
3.1.4 Collision Differences . . . . .	17
3.1.5 Jurisdictional Differences . . . . .	18
3.2 Trends in Alcohol Use: 1987-1996 . . . . .	19
3.2.1 Alcohol Among All Drivers . . . . .	20
3.2.2 Alcohol Use Among Automobile Drivers . . . . .	21
3.2.3 Alcohol Use Among Drivers of Trucks/Vans . . . . .	21
3.2.4 Alcohol Use Among Motorcycle Riders . . . . .	22
3.2.5 Alcohol Use Among Tractor-Trailer Drivers . . . . .	22
B. Alcohol Use Among Fatally Injured Pedestrians . . . . .	22
3.3 General Findings . . . . .	23



3.3.1 Age Differences . . . . .	23
3.3.2 Gender Differences . . . . .	24
3.3.3 Jurisdictional Differences . . . . .	25
3.4 Trends in Alcohol Use: 1987-1996 . . . . .	26
INTRODUCTION TO SECTIONS 4.0 TO 15.0 . . . . .	53
4.0 BRITISH COLUMBIA . . . . .	55
5.0 ALBERTA . . . . .	67
6.0 SASKATCHEWAN . . . . .	79
7.0 MANITOBA . . . . .	91
8.0 ONTARIO . . . . .	103
9.0 QUEBEC . . . . .	115
10.0 NEW BRUNSWICK . . . . .	127
11.0 PRINCE EDWARD ISLAND . . . . .	139
12.0 NOVA SCOTIA . . . . .	147
13.0 NEWFOUNDLAND AND LABRADOR . . . . .	159
14.0 NORTHWEST TERRITORIES . . . . .	167
15.0 YUKON TERRITORY . . . . .	169
APPENDIX A: THE FATALITY DATABASE PROJECT -- OVERVIEW .	171
REFERENCES . . . . .	181

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# 1.0 THE FATALITY DATABASE PROJECT

## 1.1 OVERVIEW AND PURPOSE

The purpose of the *Fatality Database* is to provide a comprehensive source of objective data on alcohol use among persons fatally injured in motor vehicle accidents occurring on or off public highways in Canada. It has proven to be a useful source of descriptive data on the magnitude and characteristics of the alcohol-(fatal) crash problem, a means for monitoring changes/trends in the problem as well as a valuable tool for research on alcohol-impaired driving.

Developed and maintained by the Traffic Injury Research Foundation of Canada (TIRF), the database contains basic information on persons fatally injured in motor vehicle accidents. This includes: characteristics of drivers, passengers, and pedestrians (e.g., age, sex); details of the crash (e.g., type of collision, date, time); and type of vehicle(s) involved. Objective information on the presence and quantity of alcohol (concentrations detected by chemical tests on blood, urine or other body fluids) as well as information needed to **interpret** the results of chemical tests -- such as time of death after crash -- are key features of the database.

The *Fatality Database* is historically intact from 1973 to 1996, inclusive, for seven provinces; since 1987 data have been assembled from all provinces and territories in Canada.

## 1.2 SCOPE OF REPORT

In the following sections of this report, the conduct and most recent findings of the *Fatality Database* Project are described.



Section 2.0, *A Description of The Fatality Database*, outlines how the data on traffic fatalities were compiled; numbers of cases included in the database are reported; and, rates of testing for alcohol across Canada are indicated.

Section 3.0 provides descriptive data on the incidence of alcohol among fatally injured drivers and pedestrians in Canada during 1996. Also examined in this section are *trends* in alcohol use among fatally injured operators of automobiles, trucks/vans, motorcycles, and tractor-trailers and trends in alcohol use among pedestrian fatalities.

In subsequent sections (4.0 through 15.0), data on alcohol use among fatally injured drivers obtained from each province and territory are summarized. General descriptive information on the incidence of alcohol use among fatally injured drivers are first presented; then, trends in alcohol involvement among fatally injured drivers are examined.

For readers not familiar with the *Fatality Database*, Appendix A provides an overview of this long-standing project and describes the design of the project in greater detail.

## 2.0 DESCRIPTION OF THE FATALITY DATABASE

### 2.1 OVERVIEW

The *Fatality Database* consists of case files (records) of persons fatally injured in traffic crashes. Two sources of information provide data for most case files: (1) police-reported data on fatal motor vehicle accidents and (2) files in the offices of coroners and medical examiners. In general, *both* sources must be accessed to obtain complete data on victims, crashes, vehicles, and toxicology. Police-reported data include characteristics of the victim (age and sex, position in the vehicle -- driver, passenger) and details of the crash (type of vehicle(s) and collision, time, date). Objective, toxicological data on alcohol use among victims are obtained from files in coroners' and medical examiners' offices. The alcohol data are the results of chemical tests, performed on body fluid samples (typically blood), by recognized forensic laboratories or other facilities. Uniform and rigorous testing procedures in each jurisdiction ensure reliable and accurate data on the prior use of alcohol by victims of motor vehicle accidents. As will be discussed in a subsequent section, there is a high rate of testing for alcohol in most jurisdictions, especially among drivers fatally injured in motor vehicle accidents.

Details of the method used to access and collect relevant police-reported and coroner/medical examiner data on persons fatally injured in motor vehicle accidents as well as the approach used to create case files for the *Fatality Database* are provided in Appendix A.

### 2.2 NUMBER OF VICTIMS: 1987-1996

Similar to previous years, a motor vehicle fatality is broadly defined in the data capture procedures and in this report as follows: **any person dying within 12 months as a result of injuries sustained in a collision involving a motor vehicle.** Since this definition of a motor vehicle fatality differs somewhat from those of some coroners/medical examiners and some provincial transportation agencies, the number of fatalities included in the *Fatality Database* may also differ slightly from those reported

by official sources (see Appendix A for a description of how these agencies define motor vehicle fatalities).

Table 2-1 provides a comparison of the number of traffic fatalities reported by transportation agencies with the number of motor vehicle fatalities included in the *Fatality Database*, for the years 1987 through 1996. Over this ten-year period, for most jurisdictions, the number of case files in the database is somewhat higher than that officially reported by transportation agencies. This is further illustrated in Figure 2-1, which presents the comparative data for each jurisdiction in 1996. As can be seen, in all jurisdictions the number of motor vehicle fatalities contained in the database is larger than that officially reported by transportation agencies. The principal reason that the TIRF database has more cases than the transportation agencies is that it typically includes victims of motor vehicle crashes that occurred off-road (e.g. ATV, snowmobile) and on private property (farm tractors, industrial motor vehicles) -- cases which are not routinely contained in the files of transportation agencies. For Prince Edward Island, the Yukon Territory, and the Northwest Territories however, collection of coroner's data was limited to victims identified through police reports and, therefore, the numbers contained in the database are similar to those compiled by the transportation authorities.

## 2.3 TYPE OF VICTIM

The *Fatality Database* contains information on three types of victims involved in fatal motor vehicle accidents -- drivers/riders, passengers, and pedestrians. Drivers include operators of all types of vehicles both on road -- automobiles, trucks/vans, motorcycles, bicycles -- and off-road -- all terrain vehicles, dirtbikes, snowmobiles, and farm tractors. Similarly, passengers include other vehicle occupants as well as persons riding on vehicles (motorcycles, bicycles, ATVs) but not driving or operating them. And, finally, pedestrians are those individuals travelling on foot who were struck and fatally injured by a motor vehicle.



The number of drivers, passengers and pedestrians killed in 1996 is shown in Table 2-2, separately for each jurisdiction. Also shown for each jurisdiction is the proportion of all deaths accounted for by the various classes of road users. Canada-wide totals are given at the bottom of the table. For example, in Alberta, of the 371 people killed in motor vehicle crashes in 1996, 58.5% were drivers, 30.2% were passengers and 10.8% were pedestrians -- in 0.5% of the cases, the victim-type was not known (e.g., if all the occupants of a vehicle were ejected and killed in a single-vehicle crash, it cannot always be determined who was the driver). In most jurisdictions, the majority of fatalities were drivers -- ranging from 38% in the Northwest Territories to 71% in Prince Edward Island. Between 10% (Yukon) and 38% (Northwest Territories) of victims were passengers; and, between 10% (Prince Edward Island) and 34% were pedestrians (Newfoundland).

It should also be mentioned that various percentages of fatalities listed in Table 2-2 may differ from official provincial statistics. This is primarily due to differences in reporting conventions. For example, many provinces report bicyclists, motorcycle operators and passengers separately from *driver* and *passenger* categories. To arrive at similar distributions using the Fatality Database, the variable containing information on the *type of vehicle* occupied (or ridden) by the victim must be used.

In Canada during 1996, as shown by the totals at the bottom of the table, 3,420 persons were fatally injured in motor vehicle collisions: about 6 out of every 10 fatalities were operators of motor vehicles (56.9%); about 26.4% were passengers; and 16.0% were pedestrians. These national data are also shown graphically in Figure 2-2. From this perspective, vehicle occupants, particularly drivers, remain the major road-user group of concern for traffic safety.

## 2.4 TESTING RATES FOR ALCOHOL

The inclusion of objective data on the presence of alcohol among traffic victims represents the most important feature of the *Fatality Database*. The value of this

information depends greatly on the frequency with which tests for the presence of alcohol are performed on the body fluids of victims. Table 2-3 contains information during 1996; Canada-wide totals are shown at the bottom of the table. As can be seen, fatally injured drivers were tested most (81.3%), followed by pedestrians (59.3%) and passengers (35.5%). The testing rate increases slightly for fatally injured pedestrians and passengers if victims under the age of 16, who are less often tested, are excluded (65.6% and 37.6%, respectively). Testing rates also increase for fatally injured pedestrians if the analyses focuses on those dying less than six hours after the crash (i.e., 83% of the pedestrians were tested for alcohol).

It is evident from the information provided in the table that the rate of testing for alcohol varies not only as a function of the type of victim but by jurisdiction as well. This is illustrated graphically in Figure 2-3, which shows the rate of testing for alcohol among fatally injured drivers in the various jurisdictions. Several jurisdictions test over 80% of the driver fatalities. However, in some jurisdictions, there is clearly room for improvement -- the testing rates need to be increased to enhance the reliability and utility of the information.

In those jurisdictions with a high rate of testing for fatally injured drivers, there are various reasons why tests are not done on some drivers. This occurs, for example, when the victim survived the initial crash, was treated and later died as a result of the injuries. If a blood transfusion has been given to the victim prior to death, there is also little point in taking a blood sample for an alcohol test. And, if the victim was incinerated in a vehicle fire, body fluids may not be available for testing.

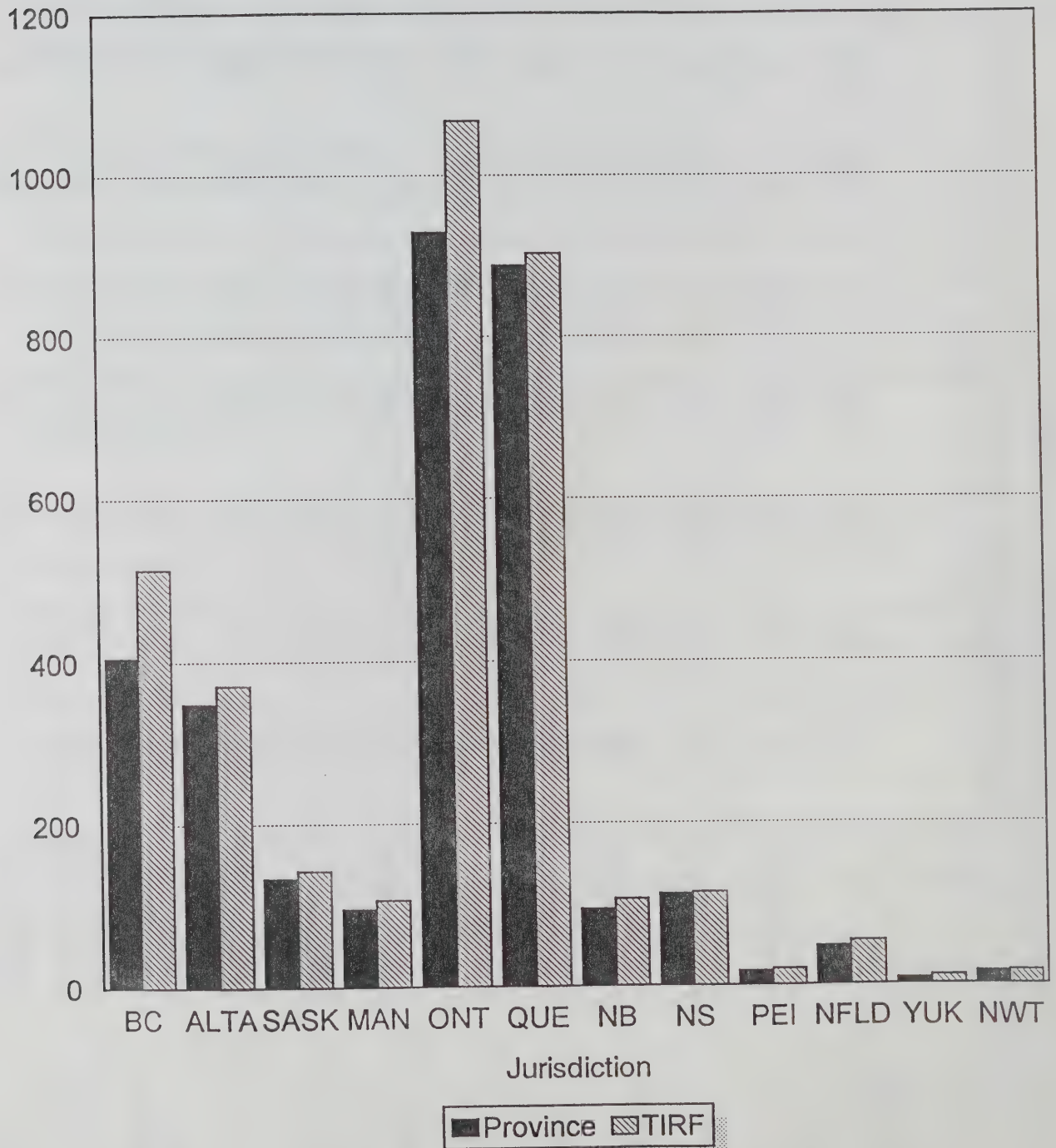
Figure 2-4 shows the rate of testing for alcohol among fatally injured pedestrians in the various jurisdictions. As can be seen, there is considerable variation in the rate of testing -- from 25% in the Northwest Territories to 100% in the Yukon Territory.

**Table 2-1**  
**Number of Fatalities Reported by Provincial Transportation Agencies**  
**and Included in the Fatality Database**

<u>PROVINCE</u>		<u>YEAR</u>									
		<u>1987</u>	<u>1988</u>	<u>1989</u>	<u>1990</u>	<u>1991</u>	<u>1992</u>	<u>1993</u>	<u>1994</u>	<u>1995</u>	<u>1996</u>
British Columbia	Province	622	615	587	655	537	473	512	534	493	405
	Fatality Database	650	650	638	704	584	500	562	592	560	512
Alberta	Province	510	464	487	409	421	368	383	395	403	349
	Fatality Database	548	526	532	442	443	405	422	432	434	371
Saskatchewan	Province	236	200	192	154	171	143	153	151	157	133
	Fatality Database	260	226	217	174	186	153	173	172	179	142
Manitoba	Province	165	141	155	121	119	118	134	119	128	95
	Fatality Database	188	156	173	141	148	140	144	131	147	106
Ontario	Province	1229	1237	1286	1120	1102	1090	1135	999	999	929
	Fatality Database	1401	1397	1491	1320	1275	1290	1314	1165	1164	1067
Quebec	Province	1116	1091	1141	1085	1012	981	982	827	883	887
	Fatality Database	1165	1173	1199	1108	1024	959	947	837	900	902
New Brunswick	Province	151	165	154	156	118	131	139	79	113	94
	Fatality Database	161	192	162	161	122	144	160	87	120	106
Nova Scotia	Province	161	146	120	150	115	113	100	91	107	112
	Fatality Database	166	155	127	153	120	117	103	95	111	114
Prince Edward Island	Province	18	21	18	29	31	12	20	18	16	17
	Fatality Database	18	21	18	30	32	12	20	19	17	21
Newfoundland	Province	59	58	89	63	51	45	45	37	33	47
	Fatality Database	59	57	87	65	51	45	45	37	33	53
Yukon Territory	Province	11	12	8	8	10	15	8	10	14	7
	Fatality Database	11	12	10	9	10	15	9	11	14	10
Northwest Territories	Province	8	4	11	8	5	11	5	3	5	15
	Fatality Database	8	4	12	11	6	12	10	3	5	16



Figure 2-1  
Number of Fatalities Reported by  
Official Sources and in Database: 1996





**Table 2-2**

**Number of Motor Vehicle Fatalities in Canada, 1996:  
Type of Victim**

<u>PROVINCE</u>	<u>DRIVER (%)</u>		<u>PASSENGER (%)</u>		<u>PEDESTRIAN (%)</u>		<u>UNKNOWN (%)</u>		<u>TOTAL (%)</u>
British Columbia	270	(52.7)	162	(31.6)	79	(15.4)	1	(0.2)	512 (100.0)
Alberta	217	(58.5)	112	(30.2)	40	(10.8)	2	(0.5)	371 (100.0)
Saskatchewan	80	(56.3)	43	(30.3)	19	(13.4)	0	(0.0)	142 (100.0)
Manitoba	58	(54.7)	28	(26.4)	18	(17.0)	2	(1.9)	106 (100.0)
Ontario	594	(55.7)	292	(27.4)	181	(17.0)	0	(0.0)	1,067 (100.0)
Quebec	550	(61.0)	190	(21.1)	147	(16.3)	15	(1.7)	902 (100.0)
New Brunswick	65	(61.3)	20	(18.9)	20	(18.9)	1	(0.9)	106 (100.0)
Nova Scotia	60	(52.6)	36	(31.6)	18	(15.8)	0	(0.0)	114 (100.0)
Prince Edward Island	15	(71.4)	4	(19.0)	2	(9.5)	0	(0.0)	21 (100.0)
Newfoundland	25	(47.2)	10	(18.9)	18	(34.0)	0	(0.0)	53 (100.0)
Yukon Territory	7	(70.0)	1	(10.0)	2	(20.0)	0	(0.0)	10 (100.0)
Northwest Territories	6	(37.5)	6	(37.5)	4	(25.0)	0	(0.0)	16 (100.0)
<b>TOTAL</b>	<b>1,947</b>	<b>(56.9)</b>	<b>904</b>	<b>(26.4)</b>	<b>548</b>	<b>(16.0)</b>	<b>21</b>	<b>(0.6)</b>	<b>3,420 (100.0)</b>

Figure 2-2  
Motor Vehicle Fatalities in Canada:  
Type of Victim, 1996

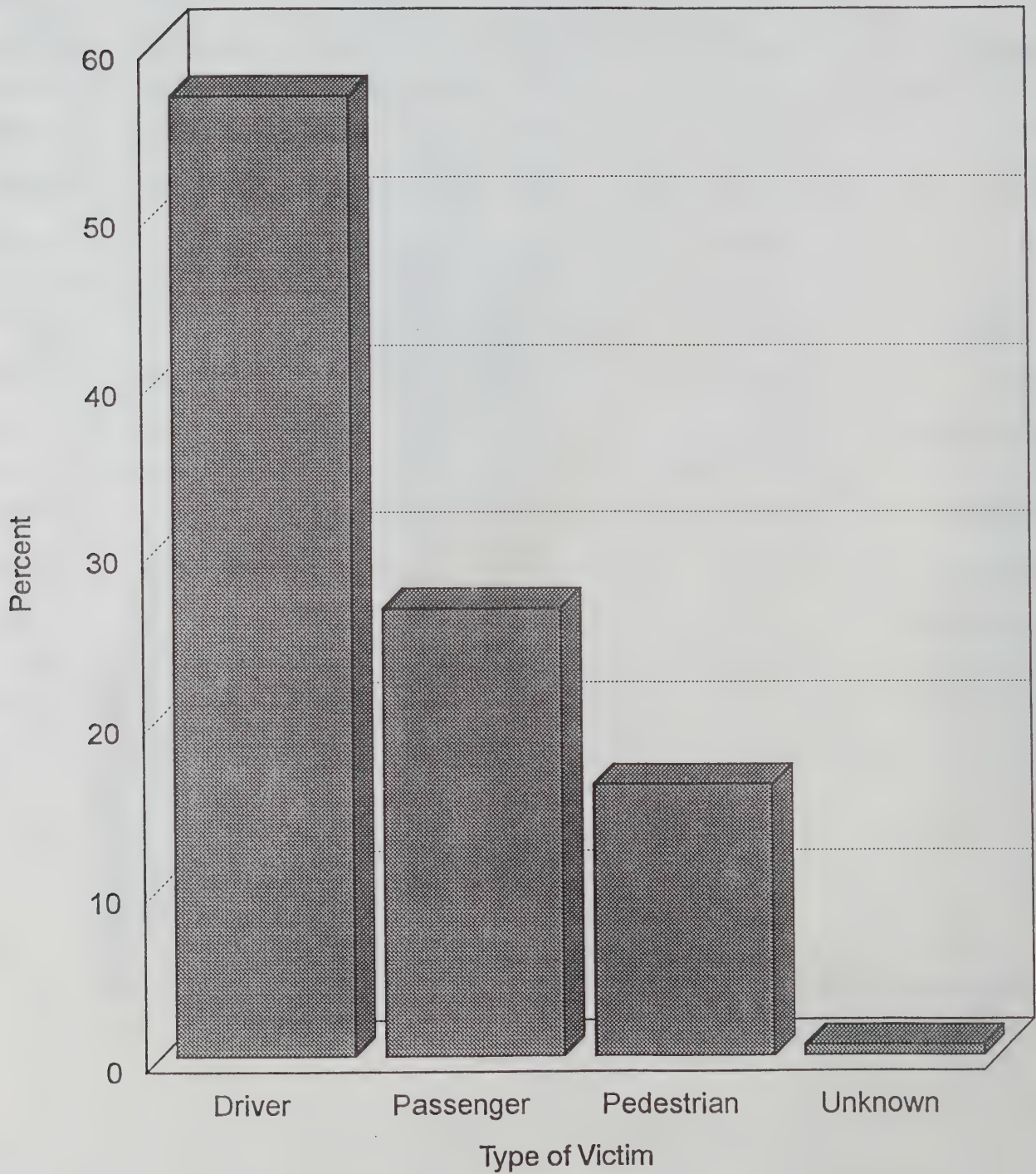


Table 2-3

Alcohol Tests\* by Type of Victim: 1996

<u>PROVINCE</u>	<u>DRIVER</u>	<u>PASSENGER</u>	<u>PEDESTRIAN</u>	<u>TOTAL</u>
British Columbia	236 (87.4)	94 (58.0)	56 (70.9)	386 (75.5)
Alberta	202 (93.1)	72 (64.3)	31 (77.5)	305 (82.7)
Saskatchewan	72 (90.0)	22 (51.2)	15 (78.9)	109 (76.8)
Manitoba	52 (89.7)	19 (67.9)	15 (83.3)	86 (82.7)
Ontario	478 (80.5)	39 (13.4)	105 (58.0)	622 (58.3)
Quebec	400 (72.7)	41 (21.6)	67 (45.6)	508 (57.3)
New Brunswick	56 (86.2)	7 (35.0)	11 (55.0)	74 (70.5)
Nova Scotia	43 (71.7)	15 (41.7)	12 (66.7)	70 (61.4)
Prince Edward Island	13 (86.7)	2 (50.0)	1 (50.0)	16 (76.2)
Newfoundland	19 (76.0)	6 (60.0)	9 (50.0)	34 (64.2)
Yukon Territory	6 (85.7)	0 (0.0)	2 (100.0)	8 (80.0)
Northwest Territories	5 (83.3)	4 (66.7)	1 (25.0)	10 (62.5)
TOTAL	1,582 (81.3)	321 (35.5)	325 (59.3)	2,228 (65.5)

\* Most victims are tested by means of a blood sample. A total of 61 victims had no blood sample taken but were tested for alcohol using urine and vitreous humour samples. In the results section of this report, these test results were converted to equivalent blood alcohol concentrations.



Figure 2-3  
Alcohol Tests Among Fatally Injured  
Drivers in Canada: 1996

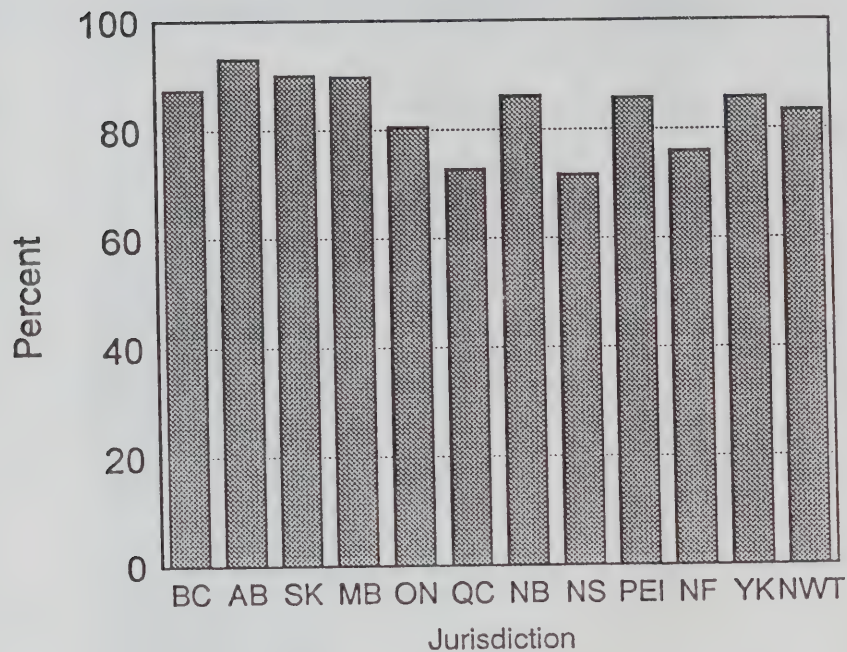
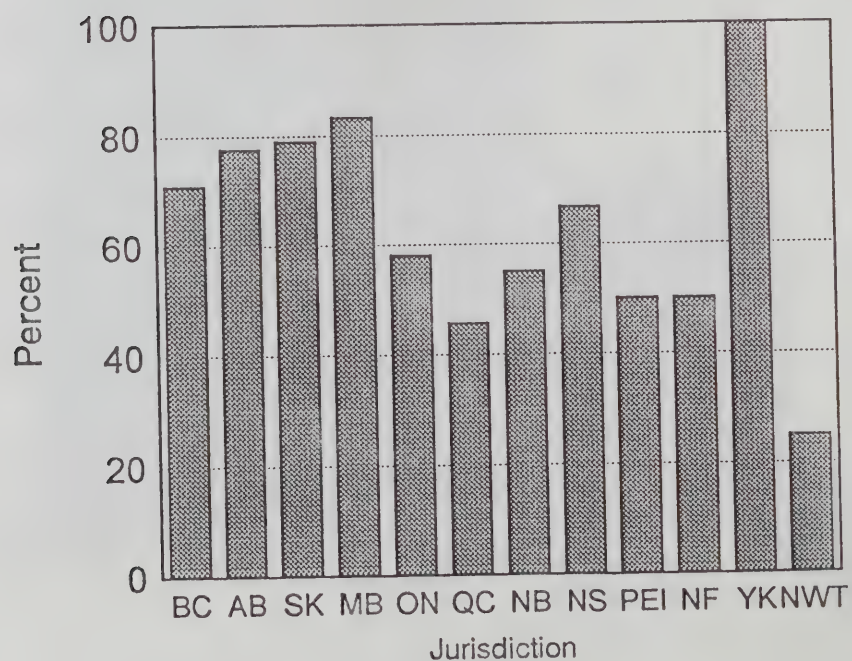


Figure 2-4  
Alcohol Tests Among Fatally  
Injured Pedestrians in Canada: 1996



## 3.0 CANADA

### A. Alcohol Use Among Fatally Injured Drivers

This section of the report contains (1) general descriptive information on the frequency and quantity of alcohol found in drivers fatally injured in motor vehicle collisions in Canada during 1996 and (2) trends in alcohol use among driver fatalities over the past ten years.

National data on alcohol use among drivers fatally injured in motor vehicle crashes are presented in section 3.1 below. The data presented there include in most cases information on *drivers of the principal types of vehicles* (e.g., automobiles, trucks, vans, motorcycles, and tractor-trailers). Thus, the category "driver" in this section of the report generally excludes bicycles, snowmobiles, farm tractors and, other non-highway vehicles (e.g., ATVs). However, section 3.1.3 on "vehicle differences" provides some information on the incidence of alcohol among operators of recreational vehicles -- i.e., snowmobiles, bicycles and off-road vehicles.

#### 3.1 GENERAL FINDINGS

During 1996, as shown by the totals at the bottom of Table 3-1, there were 1,728 drivers fatally injured in traffic crashes in Canada. The overall rate of testing for alcohol in drivers killed in Canada in 1996 was 83%, similar to the rate in 1995 (84%).

As the totals at the bottom of Table 3-1 indicate, among tested drivers in Canada:

- o 58.4% showed no evidence of alcohol;
- o 5.0% had BACs below 50 mg%;
- o 1.7% had BACs from 50 to 80 mg%;
- o 9.3% had BACs from 81 to 150 mg%; and,
- o 25.6% had BACs over 150 mg%.

Thus 41.6% of fatally injured drivers in Canada had been drinking and most of these had illegal BACs. Indeed, the average BAC among fatally injured drinking drivers was 171 mg%, more than twice the legal statutory limit of over 80 mg%.

**3.1.1 Age Differences.** Table 3-1 presents data on alcohol use among fatally injured drivers of various ages in 1996. For each age group the following information is given in the table: the total number of drivers killed; the number and percent who were tested for alcohol; and the results of the alcohol tests -- this includes the number and percent of those tested in each of *five* categories of blood alcohol concentration.

Because there is a considerable amount of information in the table, various elements are considered in more detail below.

*o Rates of testing for alcohol.* Rates of testing (the third column in Table 3-1) clearly vary as a function of the age of the victim. This is depicted graphically in Figure 3-1. Rates of testing for alcohol ranged from 72% to 88%, with a national average of 83%.

*o Incidence of alcohol.* As described above, Table 3-1 provides information on the presence of alcohol in fatally injured drivers of various ages. These data are summarized in Figure 3-2. The number of age groups and the BAC categories have been compressed somewhat to facilitate presentation. For each age group, the percent of drivers who were sober (zero BAC) is shown by the lower, solid portion of the bar; the percent who were positive for alcohol but whose BAC was below the legal limit (80 mg%) is shown by the striped section in the middle, and the percent with BACs over the legal limit is shown by the upper, stippled part of the bar.

As can be seen, alcohol was detected less frequently among drivers over the age of 55. Alcohol was most frequently detected among drivers age 20-25.

Figure 3-3 presents the information in a slightly different manner. It shows the percent of all drinking drivers accounted for by each age group. The bar on the left shows the



proportion of all fatally injured drivers with BACs under the legal limit accounted for by each age group. On the right is shown the proportion of "impaired drivers" accounted for by each age group. Drivers in the 20-25 age group account for 23% of the fatally injured drivers with BACs below 80 mg%. Over one quarter of drinking-drivers (27%) with BACs over 80 mg% are in the 26-35 age group.

**3.1.2 Gender Differences.** Data on alcohol use among male and female driver fatalities are shown in Table 3-2. The table contains the same information as described above for Table 3-1 (i.e., number of drivers; number and percent tested for alcohol; and the results of those tests for 5 BAC categories). In 1996, males accounted for 79% of the drivers killed in Canada (1,357/1,728).

*o Rates of testing for alcohol.* It is interesting to note that the frequency of testing for alcohol is a function of the gender of the victim. Males were somewhat more likely to be tested than females (testing rates of 84% and 79%, respectively).

*o Incidence of alcohol.* Figure 3-4 presents the findings for alcohol use among fatally injured male and female drivers. The pie chart shows the proportion of drivers who were sober (i.e., 0 BAC) and positive for alcohol (+ BAC). The bar to the right of the pie chart shows the distribution of alcohol levels found among those who were drinking; the percent who had alcohol levels above and below the legal limit. Percentages are given inside the figures; the absolute number of cases is shown adjacent to the figure.

Among fatally injured male drivers, almost half (46%) had been drinking. In contrast, the lower portion of the figure shows that the majority of female drivers were sober (75% showed no evidence of alcohol). Not only are fatally injured female drivers less likely to be positive for alcohol, it is important to note that there are considerably fewer of them in the first place. For example, there were 524 fatally injured male drinking drivers in 1996 -- over seven times the number of corresponding females. However, among both male and female drinking drivers, most had BACs over the legal limit. Some 84% of both male and female drinking drivers had BACs over the legal limit.

Also, the average BAC among drinking drivers was 172 mg% for females and 171 mg% for males.

**3.1.3 Vehicle Differences.** Table 3-3a and 3-3b present the results of alcohol tests for drivers fatally injured in 1996 according to the type of vehicle being operated: Table 3-3a presents information for drivers of highway vehicles including automobiles, motorcycles, vans, light trucks, heavy trucks, tractor-trailers, motor homes, and other highway vehicles; and Table 3-3b shows information for operators of recreational vehicles -- bicycles, snowmobiles, off-road vehicles. Similar to previous tables, these show the number of drivers in each subgroup; the number of drivers tested; and the number of drivers in five BAC categories.

Automobile drivers accounted for the greatest number of fatalities in 1996 (66% of all driver fatalities; 1,133/1,728) followed by operators of light trucks, motorcycle riders, van drivers, tractor-trailer drivers and drivers of heavy trucks.

*o Rates of testing for alcohol.* Table 3-3a shows that overall, the rate of testing for alcohol among drivers of highway vehicles was 83%. The lowest testing rate (50%) occurred among drivers of other highway vehicles. Testing was highest among drivers of heavy trucks, other trucks and motor homes (100%). High testing rates were also found among fatally injured operators of tractor-trailers (91%).

The overall rate of testing among operators of recreational vehicles is lower than among operators of highway vehicles (70% compared to 83%). As shown in Table 3-3b, 88% of snowmobile operators were tested for alcohol but only 61% of off-road vehicle drivers and 54% of bicyclists were tested.

*o Incidence of alcohol.* The results of the alcohol tests are given in Table 3-3a and shown graphically in: Figure 3-5a for automobile drivers and drivers of vans; 3-5b for motorcycle riders and drivers of light trucks; and 3-5c for drivers of heavy trucks and tractor-trailers. A common format of presentation is used in all cases. The pie chart compares the number and percent of drivers who were sober to the number and

percent of drivers who had been drinking. The bar chart displays the BAC distribution among those who were positive for alcohol.

Among fatally injured automobile drivers, 40% had been drinking. Of those who were drinking, the vast majority (83%) had alcohol levels in excess of the legal limit. A slightly different picture emerges for drivers of vans -- only 26% had been drinking but among these drinking drivers 94% had BACs over the legal limit. As shown in Figure 3-5b, among motorcycle riders, 49% of the riders killed had been drinking and 74% of these had BACs above the legal limit. The highest incidence of drinking is found among light truck drivers -- 51% had been drinking and 89% of these had illegal BACs. Heavy truck and tractor-trailer drivers have a much lower frequency of alcohol involvement. One-eighth of fatally injured tractor-trailer drivers (13%) showed evidence of alcohol while 24% of heavy truck drivers had been drinking. However, considering the nature of the vehicles being operated and that these are professional drivers on-the-job, this lower figure should not necessarily be considered comforting. This is especially the case given that all four of the fatally injured heavy truck drivers who were positive for alcohol had high BACs. On the positive side, none of the four drinking tractor-trailer drivers had a BAC over 80 mg%.

Table 3-3b and Figures 3-5d and 3-5e present information on alcohol use by drivers operating recreational vehicles. As can be seen, among snowmobile drivers, 62% had been drinking. Of those who were drinking, 91% had BACs over the legal limit. A slightly different picture emerges among operators of off-road vehicles -- 45% of them had been drinking and 78% of these drinking drivers had BACs over the legal limit. The majority of fatally injured bicyclists were sober at the time of the collision (74%). However, among those bicyclists who had been drinking, 90% had BACs over the legal limit.

**3.1.4 Collision Differences.** Table 3-4 presents information on alcohol use by drivers involved in single- and multiple-vehicle collisions. Multiple-vehicle crashes accounted for about 56% (974/1,726) of driver fatalities.



*o Rates of testing for alcohol.* Similar to the findings from previous years, drivers dying in single-vehicle crashes -- the *type of crash* more strongly associated with impaired driving -- were tested for alcohol more frequently than those dying in multiple-vehicle crashes (87% vs. 80%).

*o Incidence of alcohol.* Figure 3-6 shows that among drivers fatally injured in single-vehicle collisions, 60% had been drinking, whereas only 26% of drivers killed in multiple-vehicle collisions had consumed alcohol. Among drinking drivers involved in single-vehicle collisions, about 90% (355/394) had illegal BACs; among those killed in multiple-vehicle collisions, 72% had BACs over the legal limit. And, although not shown in this figure, reference to Table 3-4 indicates that almost one half (42% -- 272/654) of tested drivers and 69% of those who were drinking in single-vehicle collisions had BACs in excess of 150 mg%. In contrast, among drivers fatally injured in multiple-vehicle collisions, the incidence of high BACs was much less frequent -- only 12% of tested drivers had BACs over 150 mg%. However, 47% of those who had been drinking had BACs over 150 mg%.

**3.1.5 Jurisdictional Differences.** The previous sections presented national data on alcohol use among drivers fatally injured in motor vehicle crashes. Table 3-5 presents data on alcohol use among fatally injured drivers by jurisdiction in 1996. Similar to other tables in this section, it shows the number of drivers; number and percent tested for alcohol; and the results of those tests for five BAC categories. Yukon and the Northwest Territories data have been aggregated to ensure the confidentiality of BAC results for an individual driver.

*o Rates of testing for alcohol.* Rates of testing for alcohol ranged from 72% in Nova Scotia to 95% in Saskatchewan. The national average is 83%.

*o Incidence of alcohol.* Figure 3-7 shows the percent of fatally injured drivers with positive BACs in each jurisdiction. As can be seen, the national average is 41.6%. The percent of fatally injured drivers with positive BACs is similar to this national average in six jurisdictions -- Alberta, Saskatchewan, Ontario, Quebec, New

Brunswick and Nova Scotia. The Territories (86%) have the highest percent of fatally injured drivers with positive BACs. Prince Edward Island (31%) has the lowest percent of these drivers.

Similarly, Figure 3-8 shows the proportion of fatally injured drivers with BACs over 80 mg% by jurisdiction. The percent of fatally injured drivers with BACs over the legal limit is similar to the national average -- 34.9% -- in several jurisdictions including Saskatchewan and Quebec. The Territories (86%) has the highest proportion of drivers with illegal BACs and Prince Edward Island (23%) has the lowest.

### 3.2 TRENDS IN ALCOHOL USE: 1987-1996

Driver fatalities in Canada have generally declined over the past decade and this is illustrated in Figure 3-9, which plots the number of driver fatalities over the ten-year period from 1987 to 1996. As can be seen, the number of driver fatalities reached a peak in 1989. Driver deaths then declined until 1992, increased slightly by 1993 and then declined again by 1996.

The reasons for the observed downward trend beginning in 1990 are not precisely known but are likely related to changes in demographic, social, and economic factors and conditions as well as to the introduction of various road safety countermeasures including seat belt enforcement campaigns and improved vehicle as well as roadway design. It is well recognized that such safety measures benefit all classes of road users, including drinking-drivers. Accordingly, if the number of driver fatalities have declined in the past seven years, the number of those who have been drinking should have declined as well. *It is important to recognize that such a decline may be attributable to general road safety countermeasures and may be independent of the effects of countermeasures directed specifically at drinking drivers.* For the latter to have an effect, there must be evidence of a decline in alcohol-related crashes that exceeds the decline in the overall incidence of driver deaths. **This would occur if the proportion of fatally injured drivers who have been drinking exhibits a decrease over time.** If the proportion remained constant,

then the safety gains -- declining number of driver deaths -- would be equivalent for drinking and non-drinking drivers alike. But, to repeat, if the percent of fatally injured drivers who have been drinking exhibits a decrease, it suggests that the number of alcohol-related deaths is declining faster than those that are non-alcohol related. In this case, the effects are more likely attributable to countermeasures targeted specifically at drinking drivers.

To examine this possibility, the present report focuses **on changes in the proportion of fatally injured drivers who have been drinking**. If this index has declined it suggests a beneficial impact of drinking-driving countermeasures.

**3.2.1 Alcohol Among All Drivers.** Trends in alcohol use among fatally injured drivers from 1987 to 1996 are shown in Table 3-6. As in the previous section, the table excludes operators of snowmobiles, bicycles and farm-tractors. As a consequence, these driver fatalities include primarily operators of automobiles, motorcycles, trucks/vans and tractor-trailers. Given these selection criteria, the number of drivers shown in the second column of the table does not correspond to the number of driver fatalities plotted in Figure 3-9.

As mentioned in the previous section, the number of driver fatalities has generally declined over the past ten years. The data in Table 3-6 suggest that the factors that influenced this overall downward trend affected drinking and non-drinking drivers differently. For example, if both drinking and non-drinking drivers were affected in a similar manner, the proportion of fatally injured drivers who were sober (and reciprocally, the percent who were positive for alcohol) should remain basically unchanged over this ten-year period. This is decidedly not the case as shown in Figure 3-10 which provides trends in alcohol use among driver fatalities over the ten-year period (1987-1996, inclusive). The figure shows the changes in the percent of fatally injured drivers who: (1) were sober (represented by the line); (2) had a BAC of 1-80 mg% (given by the striped bars); (3) had a BAC of 81-150 (shown by the stippled bar); and, (4) had a BAC over 150 mg% (the solid bar). As can be seen, these data clearly indicate positive change in the fatal-alcohol crash problem -- **the proportion of fatally**



**injured drivers who show no evidence of alcohol use (the upper line) has been increasing.** In 1987, 47% of fatally injured drivers were sober, compared to 58% in 1996. Moreover, over this ten-year period there has been a slight decline in the percent of drivers with high BACs -- 32% in 1987 compared to 26% in 1996. The only disruption in this overall trend occurred between 1990 and 1992 when the percent of fatally injured drivers who were sober decreased.

In summary, over the past decade there has been an overall downward trend in the number of driver fatalities. Coincidental with this trend has been a decline in the percent of fatally injured drinking drivers, with the exception of the period between 1990 and 1992. These findings suggest that inroads have been made in addressing the alcohol-fatal crash problem. In the following sections, trends in alcohol use are examined for drivers of various types of vehicles -- automobiles, trucks/vans combined, motorcycles, and tractor-trailers -- to determine whether they all reflect the same general trend as described above or whether there are differences.

**3.2.2 Alcohol Use Among Automobile Drivers.** Trends in alcohol use among fatally injured automobile drivers are shown in Figure 3-11. As can be seen, the pattern for automobile drivers mimics that described above for drivers of all types of vehicles (this should not be surprising given that the number of automobile drivers comprises such a large proportion of all driver fatalities). The percent of sober drivers increased from 1987 to 1990, decreased until 1992, and then increased again from 1993 to 1996. Among automobile drivers, the incidence of high BACs decreased from 1987 to 1990, increased in 1991 and then declined until 1993. The proportion of fatally injured drivers with high BACs increased in 1994 and has decreased slightly by 1996. The incidence of drivers with low and moderate BACs has remained relatively stable over the past three years.

**3.2.3 Alcohol Use Among Drivers of Trucks/Vans.** A slightly different picture emerges for drivers of trucks/vans. As shown in Figure 3-12, the increase in the percent of sober drivers over the past ten years has not been as pronounced. Similar to the trend for automobile drivers, there was a decrease from 1990 to 1992 in the percent

of fatally injured truck drivers who had not been drinking. The percent of sober truck/van drivers increased until 1994, dropped in 1995, and peaked in 1996. And, while the incidence of drivers with low to moderate BACs has been relatively stable since 1991, the incidence of drivers with high BACs has declined slightly since 1994.

**3.2.4 Alcohol Use Among Motorcycle Riders.** There is a relatively small number of motorcycle riders fatally injured each year. The results are shown in Figure 3-13. The trend in alcohol use among fatally injured motorcycle riders does not parallel that for drivers of other vehicles. Between 1987 and 1989 there was a noticeable increase in the percent of riders who were sober (i.e., a decrease in the proportion of those who tested positive for alcohol). The percent of riders who were sober decreased until 1991 and increased in 1992. In the past five years, there has been little change in the percent of riders who were sober. Since 1994 the percent of riders with low BACs has remained constant but the percent with moderate and high BACs has fluctuated.

**3.2.5 Alcohol Use Among Tractor-Trailer Drivers.** The number of tractor-trailer drivers fatally injured each year is far less than even the number of motorcycle riders. The data are shown in Figure 3-14. As can be seen, the incidence of "sober" drivers in this group has generally shown an increase over the past ten years. In 1987, about 27% of these drivers showed evidence of alcohol use (i.e., about 73% were sober); in recent years the incidence of alcohol use has declined to about 13%.

## **B. Alcohol Use Among Fatally Injured Pedestrians**

This section of the report contains (1) general descriptive information on the frequency and quantity of alcohol found in pedestrians struck and fatally injured by motor vehicles in Canada during 1996 and (2) trends in alcohol use among pedestrian fatalities over the past ten years. The first part includes information from all jurisdictions in Canada.

### 3.3 GENERAL FINDINGS

During 1996, as shown by the totals at the bottom of Table 3-7, there were 548 pedestrians who were struck and fatally injured in Canada by motor vehicles. The overall rate of testing for alcohol in pedestrians killed in Canada in 1996 was 59.3%. If the focus is on pedestrians age 16 and over, the testing rate increases to 66%.

As the totals at the bottom of Table 3-7 indicate, among tested pedestrians in Canada:

- o 59.7% showed no evidence of alcohol;
- o 3.1% had BACs below 50 mg%;
- o 0.9% had BACs from 50 to 80 mg%;
- o 7.4% had BACs from 81 to 150 mg%; and,
- o 28.9% had BACs over 150 mg%.

Thus, 40% of fatally injured pedestrians in Canada had been drinking and most of these had BACs over 80 mg%. The average BAC among fatally injured drinking pedestrians was 205 mg%, considerably higher than the average BAC of fatally injured drinking drivers -- 171 mg%.

**3.3.1 Age Differences.** Table 3-7 presents data on alcohol use among fatally injured pedestrians of various ages in 1996. For each age group the following information is given in the table: the total number of pedestrians killed; the number and percent who were tested for alcohol; and the results of the alcohol tests -- this includes the number and percent of those tested in each of five categories of blood alcohol concentration.

*o Rates of testing for alcohol.* Rates of testing (the third column in Table 3-7) clearly vary as a function of the age of the victim. This is depicted graphically in Figure 3-15. The lowest testing rates are found among pedestrians under the age of 16 (17%) and those over the age of 55 (53%). The testing rate for other age groups is high, especially among 18-19 and 20-25 year olds -- about 88% of these pedestrians were tested.



*o Incidence of alcohol.* As described above, Table 3-7 provides information on the presence of alcohol in fatally injured pedestrians of various ages. These data are summarized in Figure 3-16. The number of age groups and the BAC categories have been compressed somewhat to facilitate presentation. For each age group, the percent of pedestrians who were sober (zero BAC) is shown by the lower, solid portion of the bar; the percent who were positive for alcohol but whose BAC was below 80 mg% is shown by the striped section in the middle, and the percent with BACs over 80 mg% is shown by the upper, stippled part of the bar.

As can be seen, alcohol was detected less frequently among pedestrians over the age of 55 (18%). Alcohol was most frequently detected among pedestrians age 26-35 (69%).

Figure 3-17 presents information in a slightly different manner. It shows the percent of all drinking pedestrians accounted for by each age group. The bar in the left shows the proportion of all fatally injured pedestrians with BACs below 80 mg% accounted for by each age group. On the right is shown the proportion of pedestrians with BACs over 80 mg% accounted for by each age group. Pedestrians age 26-35 account for almost half (46%) of the fatally injured pedestrians with BACs below 80 mg%. Drinking pedestrians age 26-35 and 36-45 each account for 21% of those with BACs over 80 mg%.

**3.3.2 Gender Differences.** Data on alcohol use among male and female pedestrians are shown in Table 3-8. The table contains the same information as described above for Table 3-7 (i.e., number of pedestrians; number and percent tested for alcohol; and the results of those tested for five BAC categories). In 1996, males accounted for 65% of the pedestrians killed in Canada (357/548).

*o Rates of testing for alcohol.* Testing for alcohol varies as a function of gender. Males are more likely to be tested than females (testing rates of 65% and 49%, respectively). These testing rates increase if fatally injured pedestrians under the age of 16 are excluded from the analysis -- a testing rate of 71% for males and 54% for females.

*o Incidence of alcohol.* Figure 3-18 presents the findings for alcohol use among fatally injured male and female pedestrians. The pie chart shows the proportion of those pedestrians who were sober (i.e., 0 BAC) and those positive for alcohol (+ BAC). The bar to the right of the pie chart shows the distribution of alcohol levels found among those who were drinking; the percent who had BACs above and below 80 mg%. Percentages are given inside the figures; the absolute number of cases is shown adjacent to the figure.

Among fatally injured male pedestrians, 48% had been drinking. In contrast, the lower portion of the figure shows that the majority of female pedestrians were sober (80% showed no evidence of alcohol). However, among both male and female drinking pedestrians, most have BACs over 80 mg%, 88% of male drinking pedestrians had BACs over 80 mg%; while all 19 female drinking pedestrians (100%) had BACs over 80 mg%.

**3.3.3 Jurisdictional Differences.** Table 3-9 presents the results of alcohol tests for fatally injured pedestrians in 1996 for each province and territory. Similar to previous tables, this one shows the number of pedestrians in each jurisdiction; the number of pedestrians tested; and the number of pedestrians in five BAC categories. Pedestrians in the Yukon and Northwest Territories have been aggregated so it is not possible to identify an individual's BAC.

*o Rates of testing alcohol.* Table 3-9 shows that overall the rate of testing for alcohol was 59.3%. The lowest testing rate (46%) occurs in Quebec. Testing was highest in Manitoba (83%).

*o Incidence of alcohol.* The highest incidence of alcohol in fatally injured pedestrians was in the Territories and in Alberta -- 100% and 58% of pedestrians had been drinking, respectively. The lowest incidence of alcohol was in Prince Edward Island, where the one fatally injured pedestrian tested for alcohol was sober, and in Manitoba (80% of fatally injured pedestrians were sober). High BACs were characteristic of fatally injured drinking pedestrians in all jurisdictions. For example, in Alberta among tested fatally injured pedestrians, 45% had BACs over 150 mg%.

### 3.4 TRENDS IN ALCOHOL USE: 1987-1996

Table 3-10 shows data on alcohol use among fatally injured pedestrians for 1987 to 1996. These data are based on pedestrians who died after being struck by a motor vehicle.

Given this selection criteria, the testing rate for alcohol ranges from 48% to a high of 62% over this ten-year period.

The data shown in the second column of the table also indicates that pedestrian fatalities have generally declined from a peak of 760 in 1987 to 548 pedestrians killed in 1996 -- a 28% decrease. This overall pattern -- a decrease in the number of pedestrian fatalities -- is consistent with other sources of information.

Figure 3-19 shows the percent of fatally injured pedestrians who: (1) were sober (represented by the line); (2) had a BAC of 1-80 mg% (given by the striped bars); (3) had a BAC of 81-150 (shown by the stippled bar); and (4) had a BAC over 150 mg% (the solid bar).

As can be seen, between 1987 and 1993 the proportion of fatally injured pedestrians who show no evidence of alcohol remained relatively stable. The percent of sober pedestrians decreased in 1994 and then increased in 1995. The percent of fatally injured pedestrians who were sober peaked at 60% in 1996. The incidence of fatally injured pedestrians with high BACs decreased between 1987 and 1989, increased in 1990, and remained stable until 1993. The percent of pedestrians with high BACs increased in 1994, decreased in 1995 and rose again in 1996.



**Table 3-1**

Alcohol Use Among Fatally Injured Drivers:  
Age of Drivers  
(Canada, 1996)

AGE	Number Of Drivers*	Drivers Tested (% of total)	Drivers Grouped by BAC (mg%) (% of tested)				
			Zero	1-49	50-80	81-150	>150
<16	8	7 (87.5)	6 (85.7)	0 (0.0)	1 (14.3)	0 (0.0)	0 (0.0)
16-17	52	45 (86.5)	29 (64.4)	2 (4.4)	0 (0.0)	8 (17.8)	6 (13.3)
18-19	113	96 (85.0)	56 (58.3)	3 (3.1)	6 (6.3)	14 (14.6)	17 (17.7)
20-25	275	239 (86.9)	105 (43.9)	15 (6.3)	7 (2.9)	33 (13.8)	79 (33.1)
26-35	357	312 (87.4)	161 (51.6)	13 (4.2)	5 (1.6)	28 (9.0)	105 (33.7)
36-45	292	254 (87.0)	125 (49.2)	14 (5.5)	3 (1.2)	22 (8.7)	90 (35.4)
46-55	227	193 (85.0)	125 (64.8)	9 (4.7)	2 (1.0)	15 (7.8)	42 (21.8)
>55	404	290 (71.8)	231 (79.7)	16 (5.5)	1 (0.3)	13 (4.5)	29 (10.0)
TOTAL	1,728	1,436 (83.1)	838 (58.4)	72 (5.0)	25 (1.7)	133 (9.3)	368 (25.6)

\* Excludes operators of bicycles, snowmobiles, farm tractors, and other non-highway vehicles.

Figure 3-1  
Percent of Testing for Alcohol Among  
Drivers of Various Ages: Canada, 1996

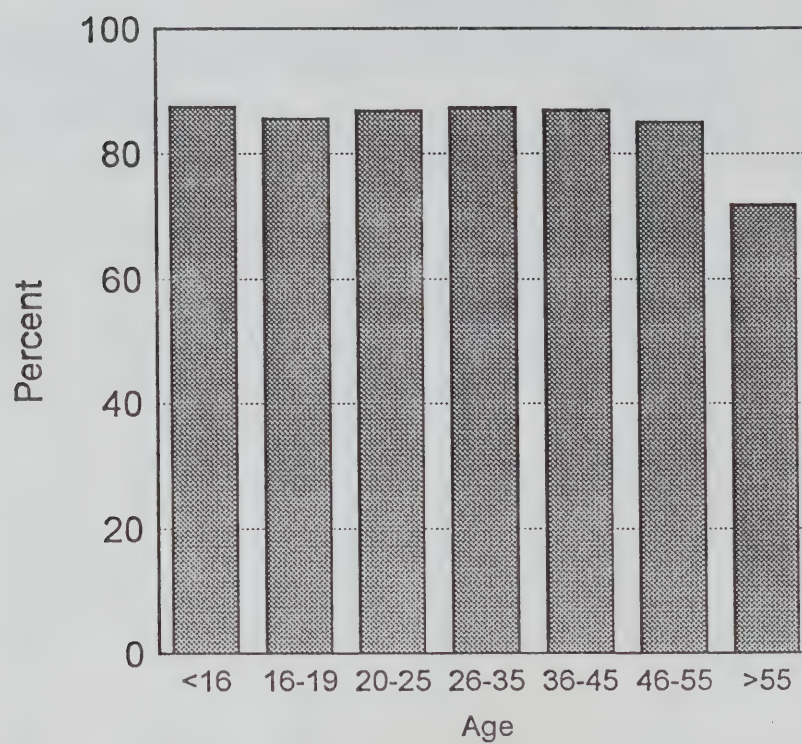


Figure 3-2  
Alcohol Use and Age of Driver  
Canada, 1996

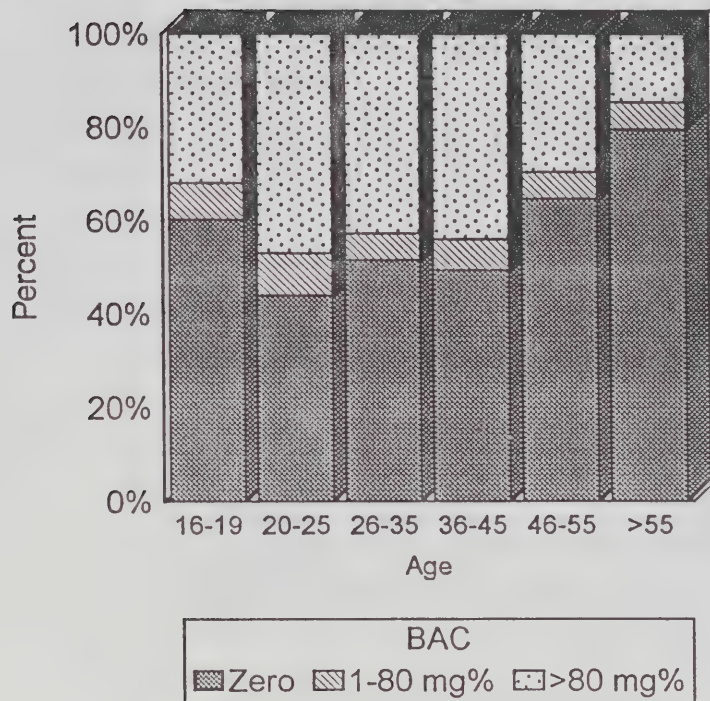
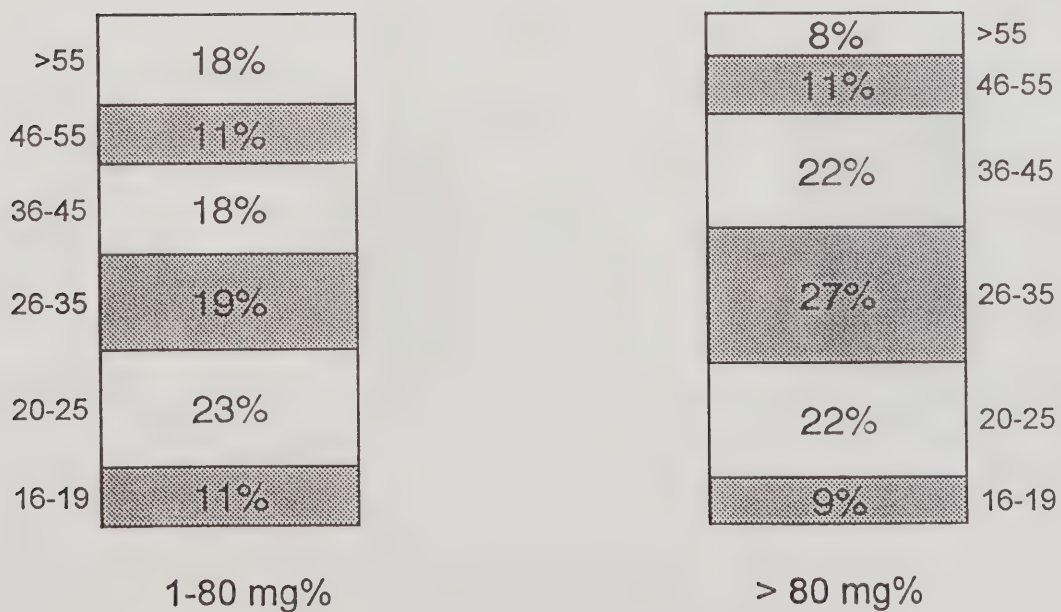


Figure 3-3  
Proportion of Drinking Drivers by Age  
Canada, 1996





**Table 3-2**

Alcohol Use Among Fatally Injured Drivers:  
Sex of Drivers  
(Canada, 1996)

SEX	Number Of Drivers*	Drivers Tested (% of total)	Drivers Grouped by BAC (mg%) (% of tested)				
			Zero	1-49	50-80	81-150	>150
MALE	1,357	1,143 (84.2)	619 (54.2)	60 (5.2)	25 (2.2)	121 (10.6)	318 (27.8)
FEMALE	371	293 (79.0)	219 (74.7)	12 (4.1)	0 (0.0)	12 (4.1)	50 (17.1)
TOTAL	1,728	1,436 (83.1)	838 (58.4)	72 (5.0)	25 (1.7)	133 (9.3)	368 (25.6)

\* Excludes operators of bicycles, snowmobiles, farm tractors, and other non-highway vehicles.

Figure 3-4  
Alcohol Use Among Male and Female  
Drivers: Canada, 1996

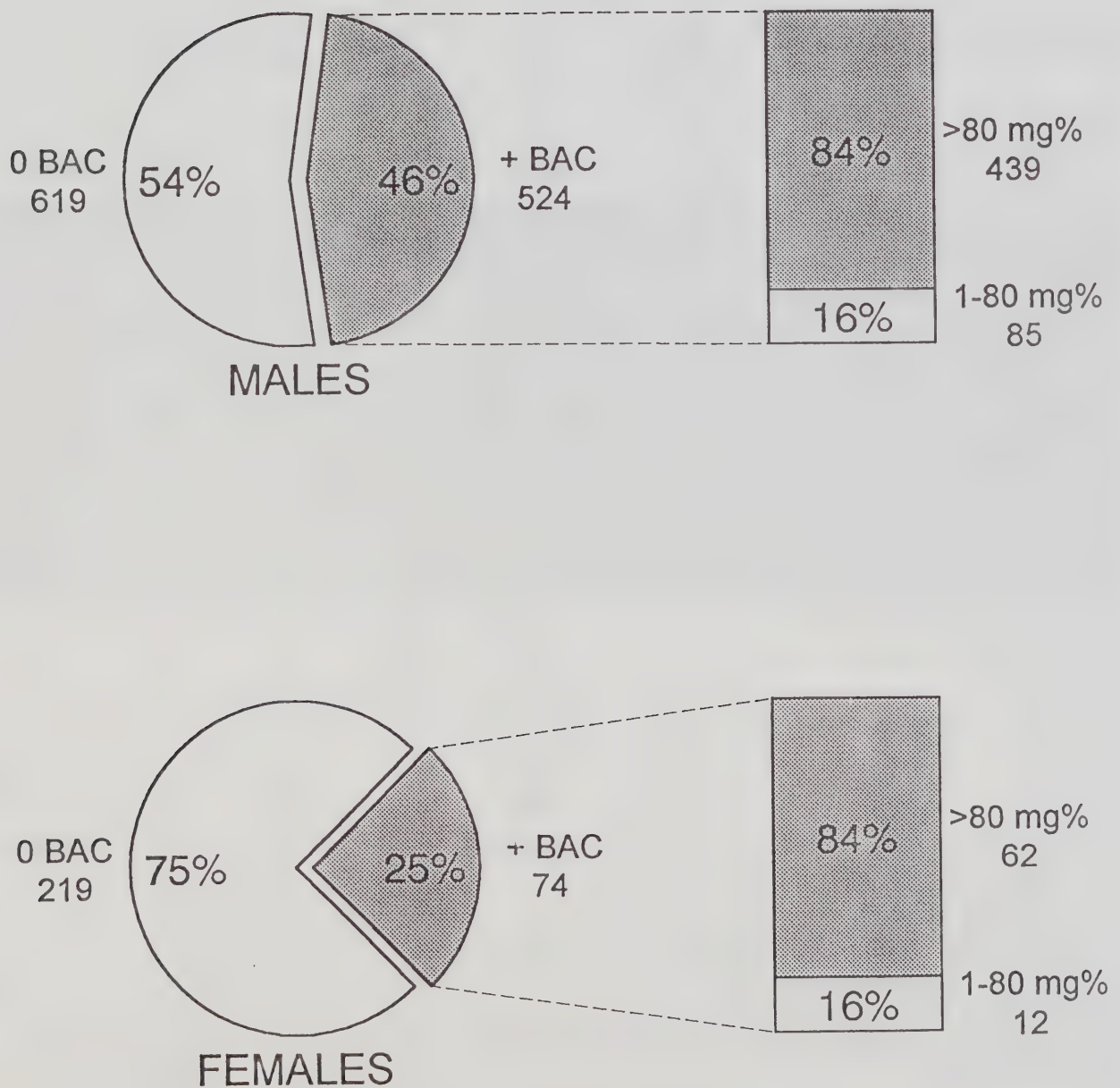


Table 3-3a

Alcohol Use Among Fatally Injured Drivers:  
Type of Highway Vehicle Involved

AGE	Number Of Drivers*	Drivers Tested (% of total)	Drivers Grouped by BAC (mg%) (% of tested)				
			Zero	1-49	50-80	81-150	>150
AUTO	1,133	925 (81.6)	554 (59.9)	47 (5.1)	16 (1.7)	85 (9.2)	223 (24.1)
MOTORCYCLE	125	95 (76.0)	48 (50.5)	7 (7.4)	5 (5.3)	14 (14.7)	21 (22.1)
TRACTOR- TRAILER	35	32 (91.4)	28 (87.5)	4 (12.5)	0 (0.0)	0 (0.0)	0 (0.0)
HEAVY TRUCK*	17	17 (100.0)	13 (76.5)	0 (0.0)	0 (0.0)	1 (5.9)	3 (17.6)
VAN	75	65 (86.7)	48 (73.8)	1 (1.5)	0 (0.0)	4 (6.2)	12 (18.5)
MOTOR- HOME	3	3 (100.0)	2 (66.7)	0 (0.0)	0 (0.0)	1 (33.3)	0 (0.0)
LIGHT TRUCK**	334	294 (88.0)	144 (49.0)	13 (4.4)	4 (1.4)	25 (8.5)	108 (36.7)
OTHER TRUCK***	4	4 (100.0)	1 (25.0)	0 (0.0)	0 (0.0)	3 (75.0)	0 (0.0)
OTHER HWY VEHICLES****	2	1 (50.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)
TOTAL	1,728	1436 (83.1)	838 (58.4)	72 (5.0)	25 (1.7)	133 (9.3)	368 (25.6)

\* Trucks over 4,500 kg.

\*\* e.g., pickup trucks.

\*\*\* Includes utility vehicles, plows and trucks of unknown type.

\*\*\*\* Includes emergency vehicles and buses.

The vehicle types that appear in the shaded area correspond to the truck/van category used in the jurisdictional sections of this report.



Figure 3-5a  
Alcohol Use Among Drivers of Different  
Vehicle Types: Canada, 1996

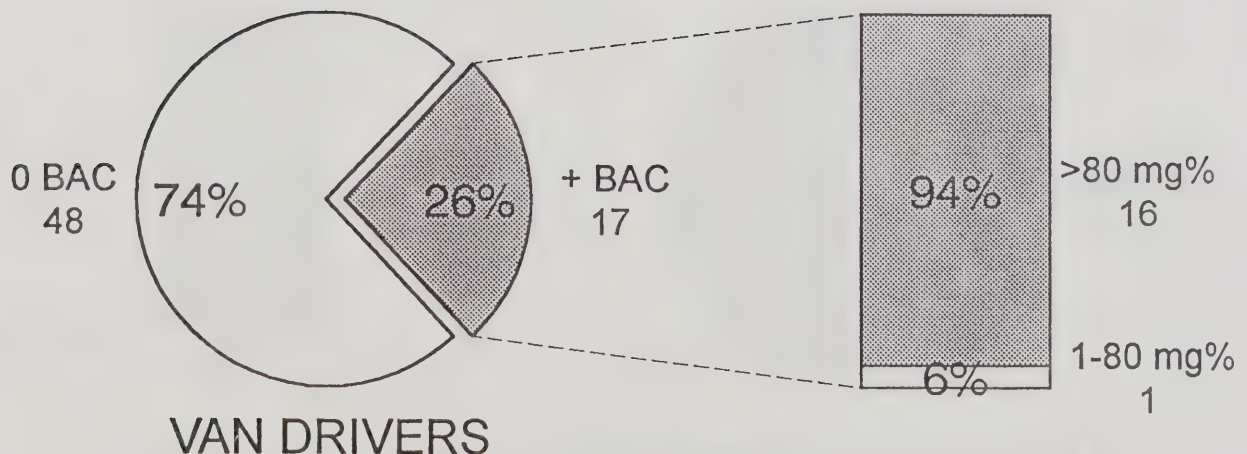
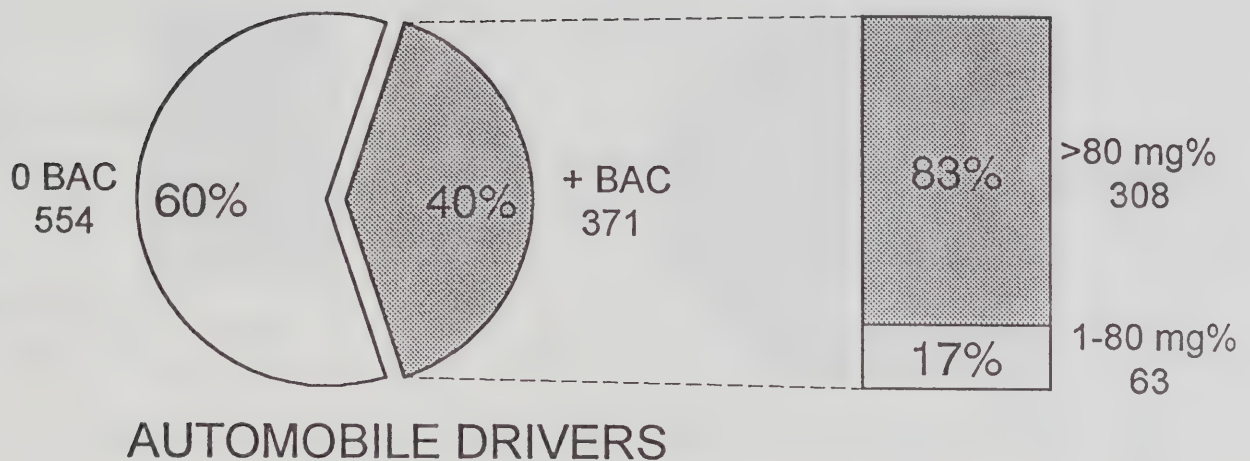


Figure 3-5b  
Alcohol Use Among Drivers of Different  
Vehicle Types: Canada, 1996

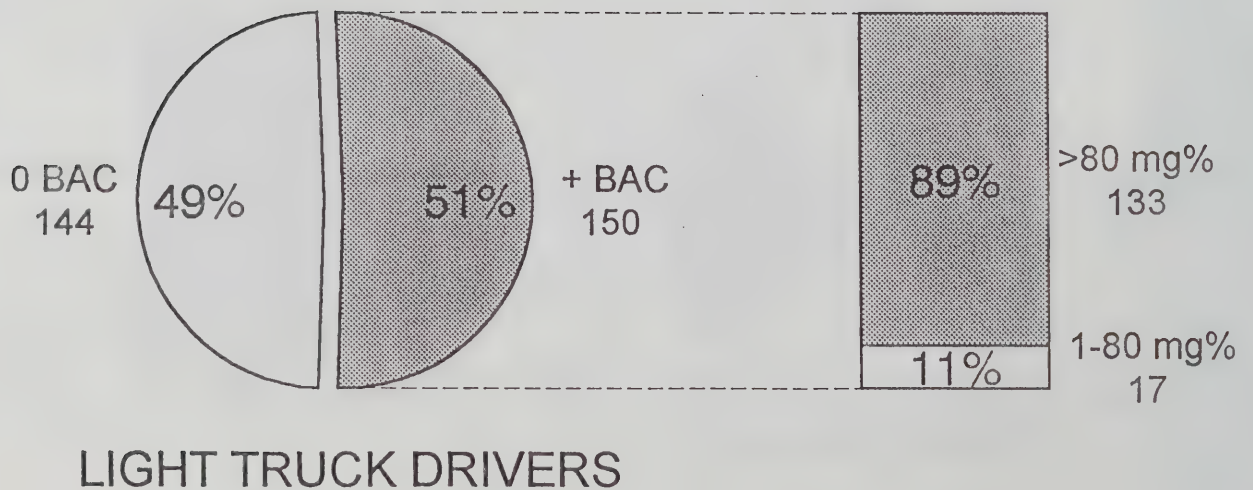
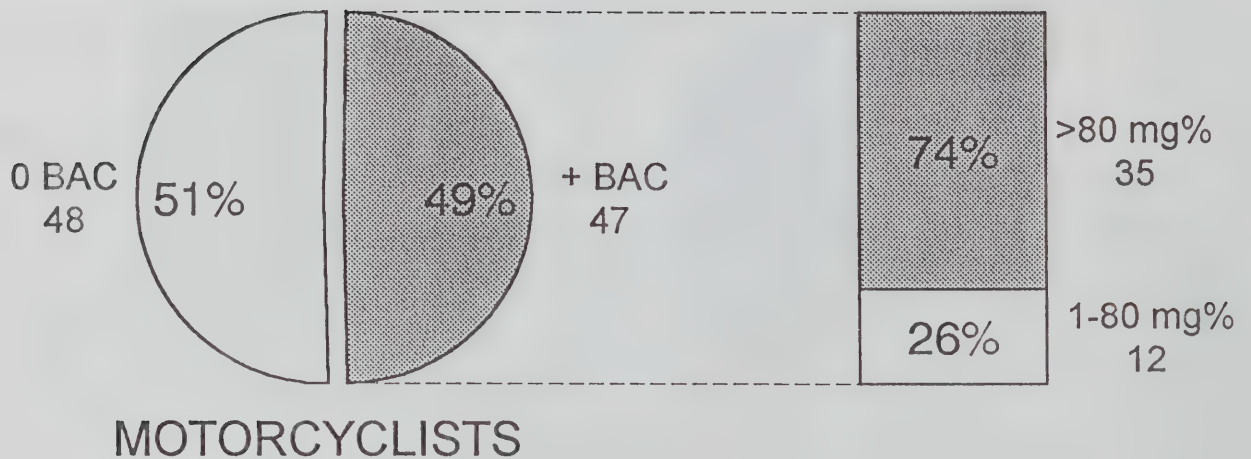
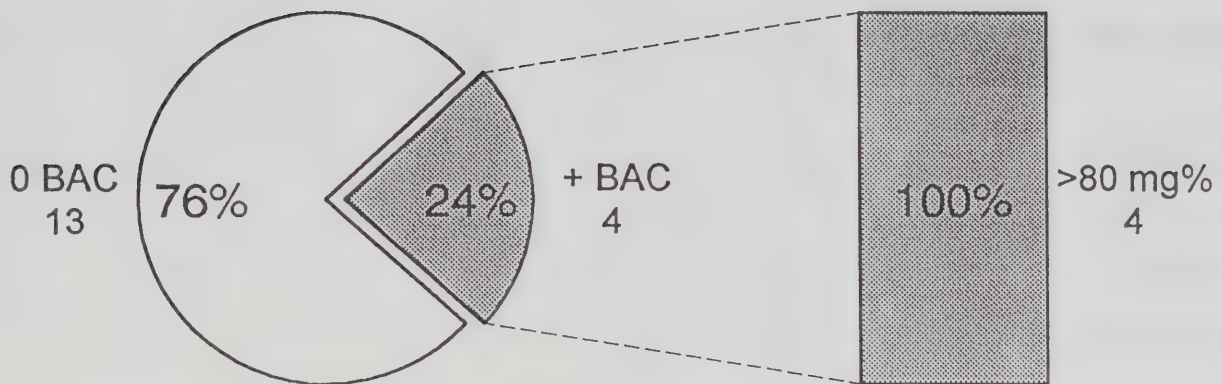
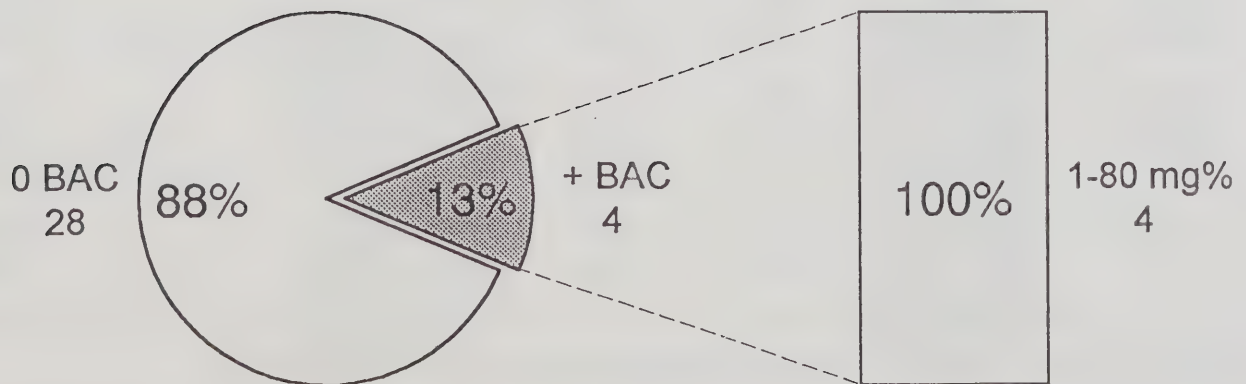


Figure 3-5c  
Alcohol Use Among Drivers of Different  
Vehicle Types: Canada, 1996



HEAVY TRUCK DRIVERS



TRACTOR-TRAILER DRIVERS



**Table 3-3b**

**Alcohol Use Among Fatally Injured Drivers:  
Type of Recreational Vehicle Involved**

VEHICLE TYPE	Number Of Drivers*	Drivers Tested (% of total)	Drivers Grouped by BAC (mg%) (% of tested)				
			Zero	1-49	50-80	81-150	>150
BICYCLE	72	39 (54.2)	29 (74.4)	0 (0.0)	1 (2.6)	1 (2.6)	8 (20.5)
SNOWMOBILE	81	71 (87.7)	27 (38.0)	4 (5.6)	0 (0.0)	13 (18.3)	27 (38.0)
OFF-ROAD VEHICLE	33	20 (60.6)	11 (55.0)	2 (10.0)	0 (0.0)	2 (10.0)	5 (25.0)
TOTAL	186	130 (69.9)	67 (51.5)	6 (4.6)	1 (0.8)	16 (12.3)	40 (30.8)

**Table 3-4**

**Alcohol Use Among Fatally Injured Drivers:  
Type of Collision**

COLLISION TYPE	Number Of Drivers*	Drivers Tested (% of total)	Drivers Grouped by BAC (mg%) (% of tested)				
			Zero	1-49	50-80	81-150	>150
SINGLE- VEHICLE	752	654 (87.0)	260 (39.8)	25 (3.8)	14 (2.1)	83 (12.7)	272 (41.6)
MULTIPLE- VEHICLE	974	781 (80.2)	577 (73.9)	47 (6.0)	11 (1.4)	50 (6.4)	96 (12.3)
TOTAL	1,726	1,435 (83.1)	837 (58.3)	72 (5.0)	25 (1.7)	133 (9.3)	368 (25.6)

\* Excludes operators of bicycles, snowmobiles, farm tractors, and other non-highway vehicles.

Figure 3-5d  
Alcohol Use Among Drivers of Different  
Vehicle Types: Canada, 1996

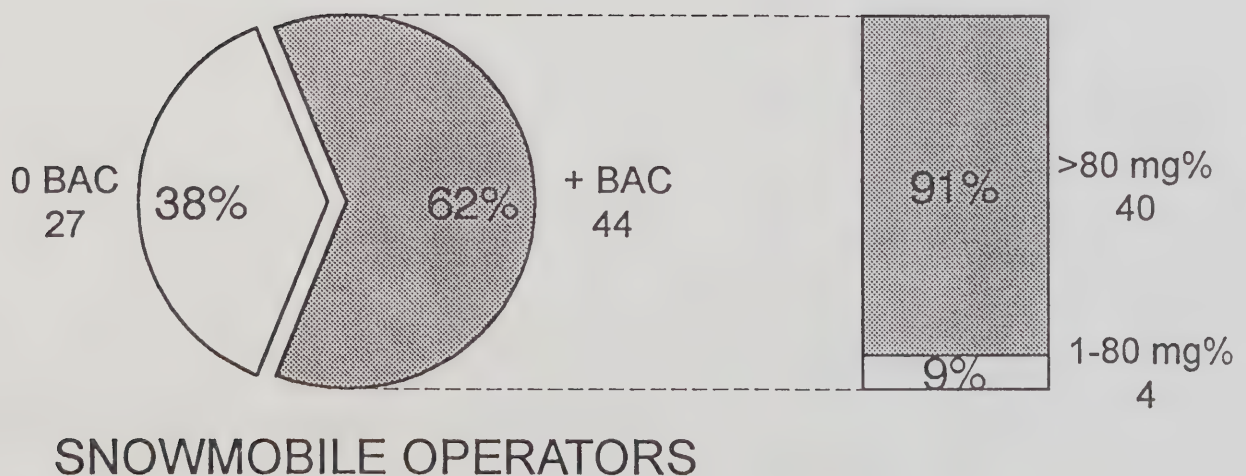
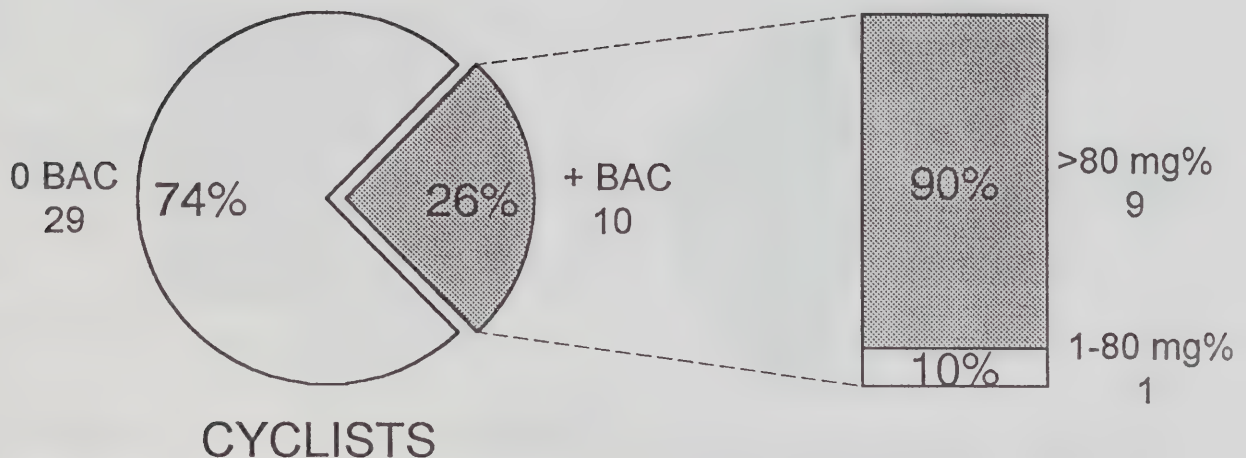
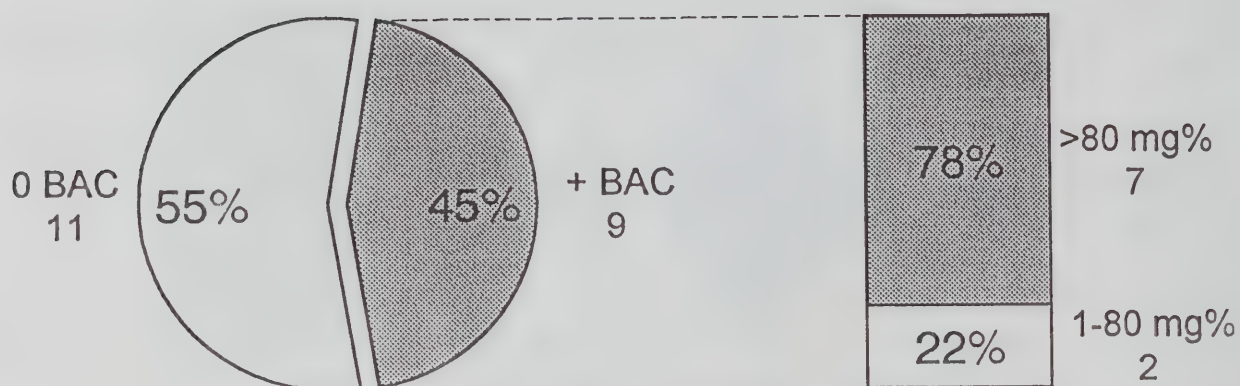


Figure 3-5e  
Alcohol Use Among Drivers of Different  
Vehicle Types: Canada, 1996



OFF-ROAD VEHICLE OPERATORS



Figure 3-6  
Alcohol Use Among Drivers: Type of  
Collision: Canada, 1996

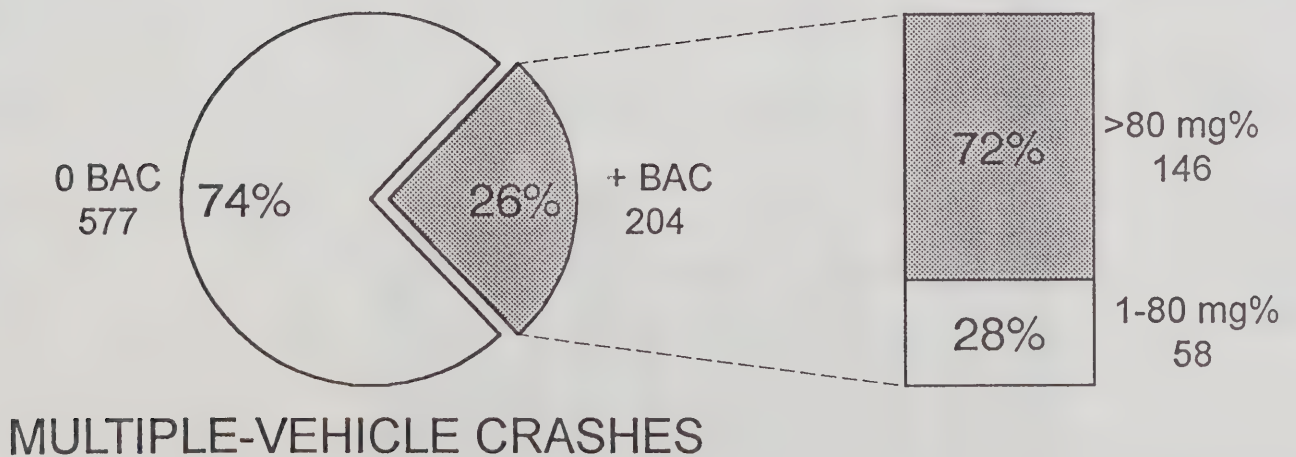
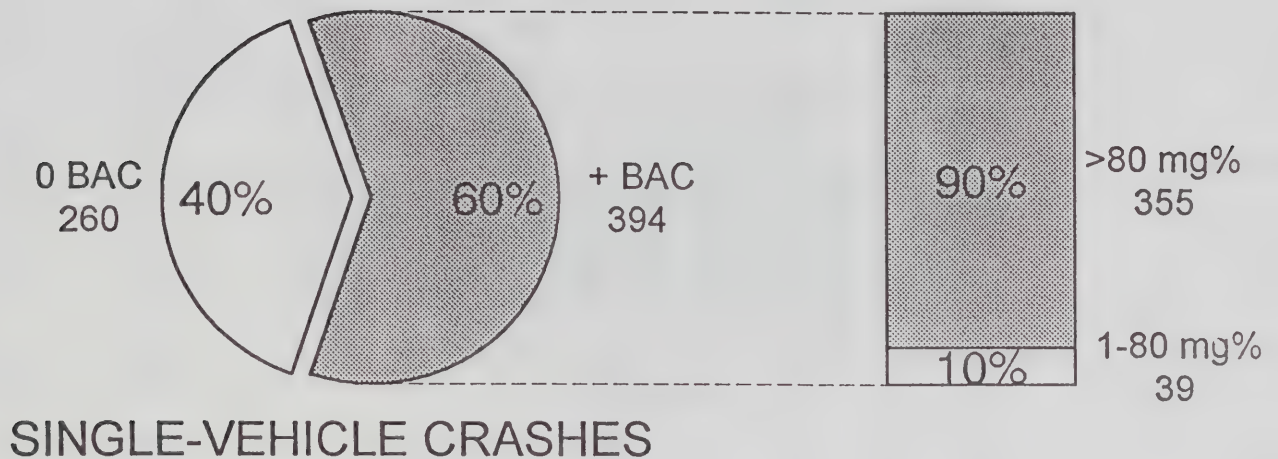


Table 3-5

Alcohol Use Among Fatally Injured Drivers:  
by Province/Territory: 1996

<u>PROVINCE</u>	<u>Number Of Drivers*</u>	<u>Drivers Tested (% of total)</u>	<u>Drivers Grouped by BAC (mg%)</u> (% of tested)				
			<u>Zero</u>	<u>1-49</u>	<u>50-80</u>	<u>81-150</u>	<u>&gt;150</u>
British Columbia	248	221 (89.1)	111 (50.2)	9 (4.1)	8 (3.6)	20 (9.0)	73 (33.0)
Alberta	206	193 (93.7)	121 (62.7)	11 (5.7)	2 (1.0)	16 (8.3)	43 (22.3)
Saskatchewan	73	69 (94.5)	41 (59.4)	4 (5.8)	0 (0.0)	6 (8.7)	18 (26.1)
Manitoba	48	44 (91.7)	19 (43.2)	2 (4.5)	1 (2.3)	6 (13.6)	16 (36.4)
Ontario	523	430 (82.2)	271 (63.0)	27 (6.3)	6 (1.4)	35 (8.1)	91 (21.2)
Quebec	474	355 (74.9)	205 (57.7)	13 (3.7)	6 (1.7)	34 (9.6)	97 (27.3)
New Brunswick	58	50 (86.2)	31 (62.0)	2 (4.0)	2 (4.0)	7 (14.0)	8 (16.0)
Nova Scotia	57	41 (71.9)	23 (56.1)	2 (4.9)	0 (0.0)	3 (7.3)	13 (31.7)
Prince Edward Island	15	13 (86.7)	9 (69.2)	1 (7.7)	0 (0.0)	1 (7.7)	2 (15.4)
Newfoundland	18	13 (72.2)	6 (46.2)	1 (7.7)	0 (0.0)	4 (30.8)	2 (15.4)
Yukon and NWT**	8	7 (87.5)	1 (14.3)	0 (0.0)	0 (0.0)	1 (14.3)	5 (71.4)
TOTAL	1,728	1,436 (83.1)	838 (58.4)	72 (5.0)	25 (1.7)	133 (9.3)	368 (25.6)

\* Excludes operators of bicycles, snowmobiles, farm tractors, and other non-highway vehicles.

\*\* The drivers for these two jurisdictions have been aggregated to ensure that the BAC of one of the drivers cannot be identified.

Figure 3-7  
Percent of Drivers with Positive BACs  
by Jurisdiction: Canada, 1996

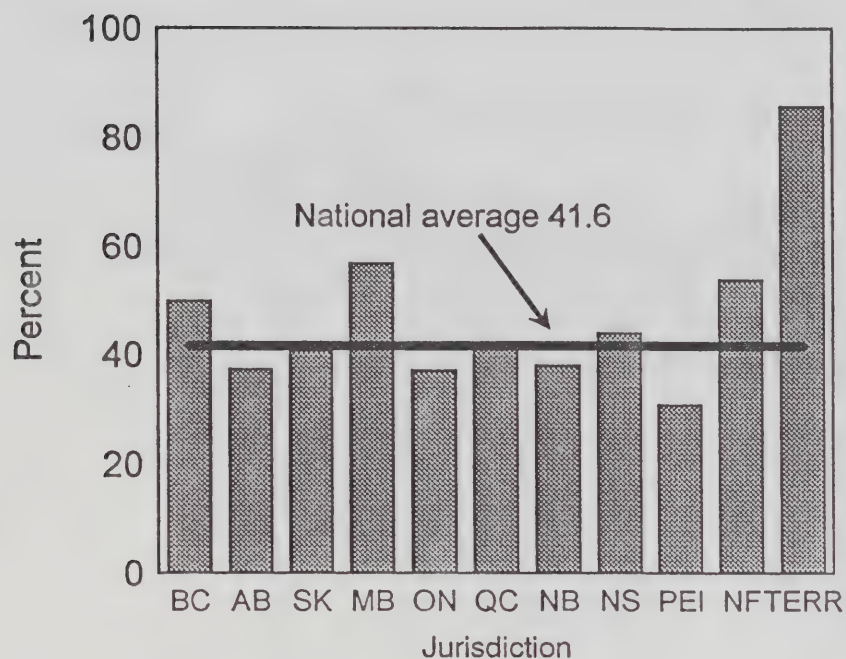


Figure 3-8  
Percent of Drivers with BACs over 80 mg%  
by Jurisdiction: Canada, 1996

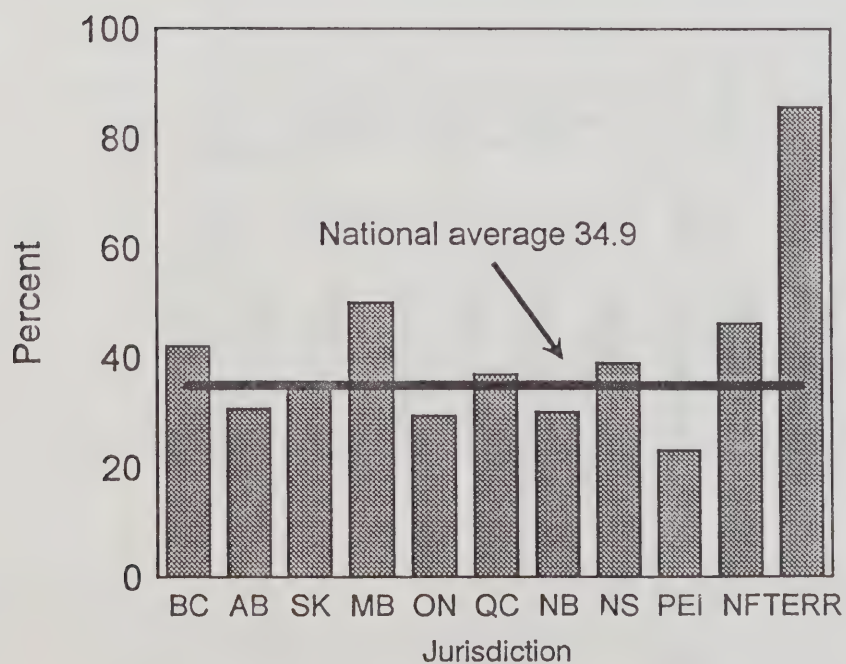






Figure 3-9  
Trend in Driver Fatalities in  
Canada: 1987-1996

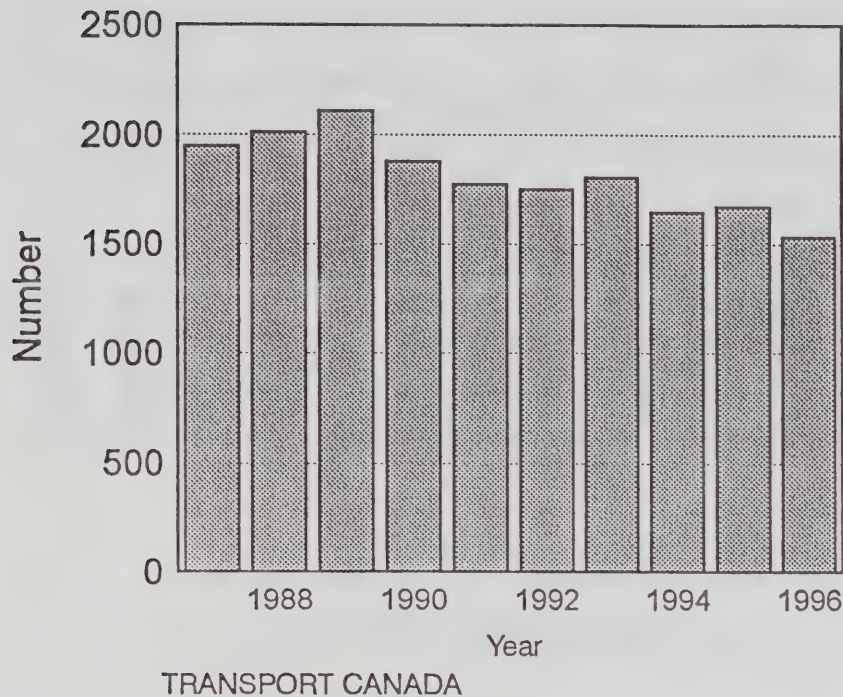


Figure 3-10  
Trends in Alcohol Use Among  
Driver Fatalities: 1987-1996

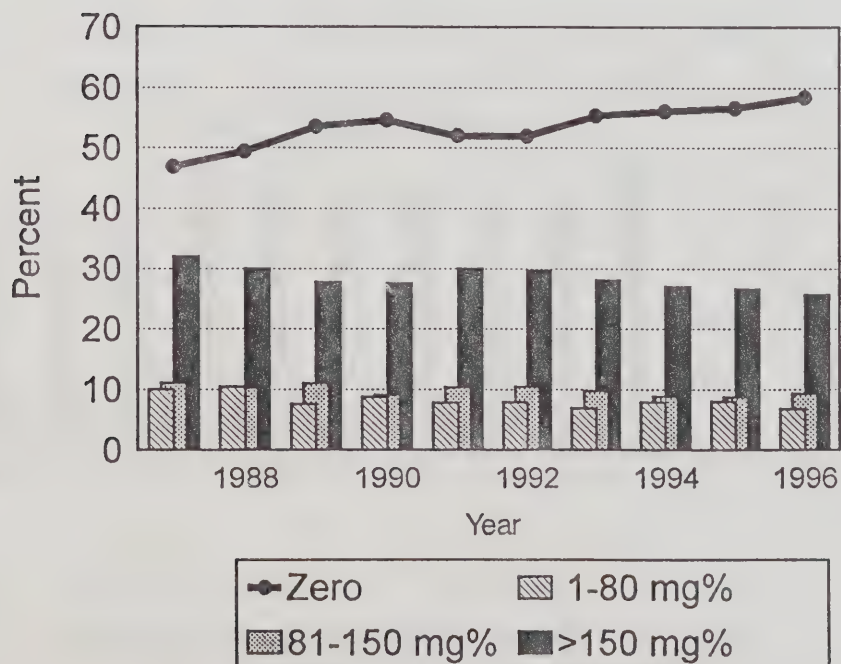


Figure 3-11  
Trends in Alcohol Use Among Automobile  
Driver Fatalities: 1987-1996

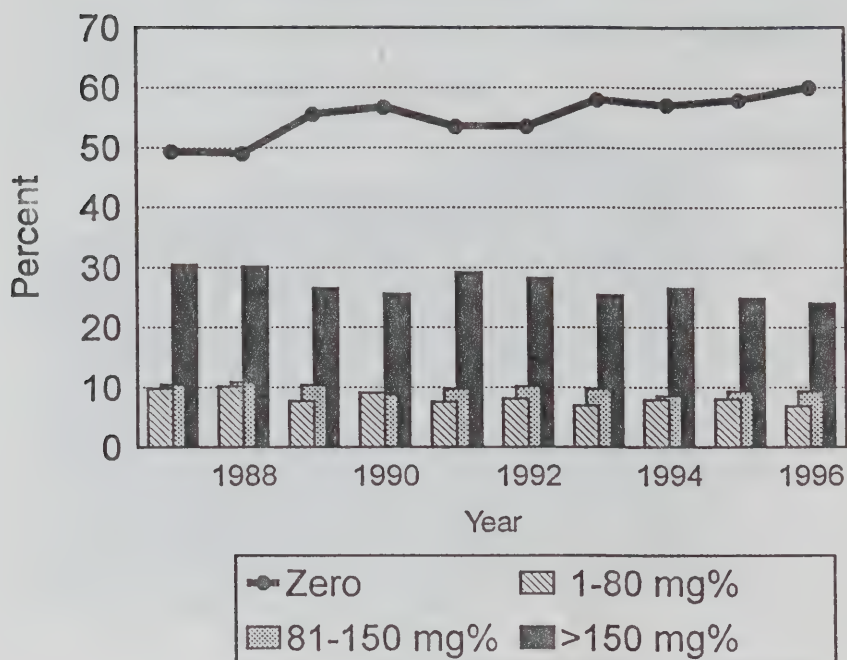


Figure 3-12  
Trends in Alcohol Use Among  
Truck/Van Driver Fatalities: 1987-1996

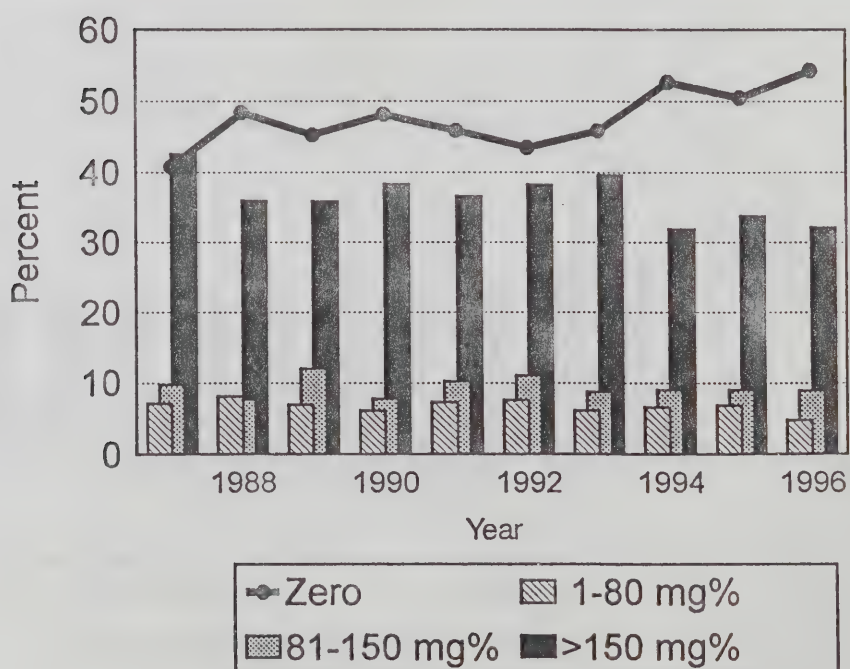




Figure 3-13  
Trends in Alcohol Use Among  
Motorcycle Driver Fatalities: 1987-1996

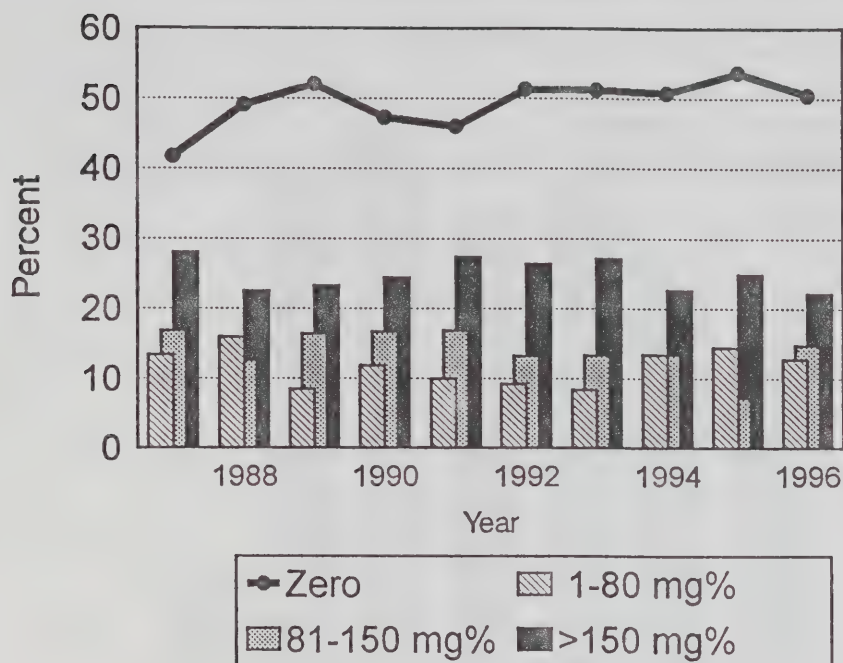


Figure 3-14  
Trends in Alcohol Use Among Tractor-  
Trailer Driver Fatalities: 1987-1996

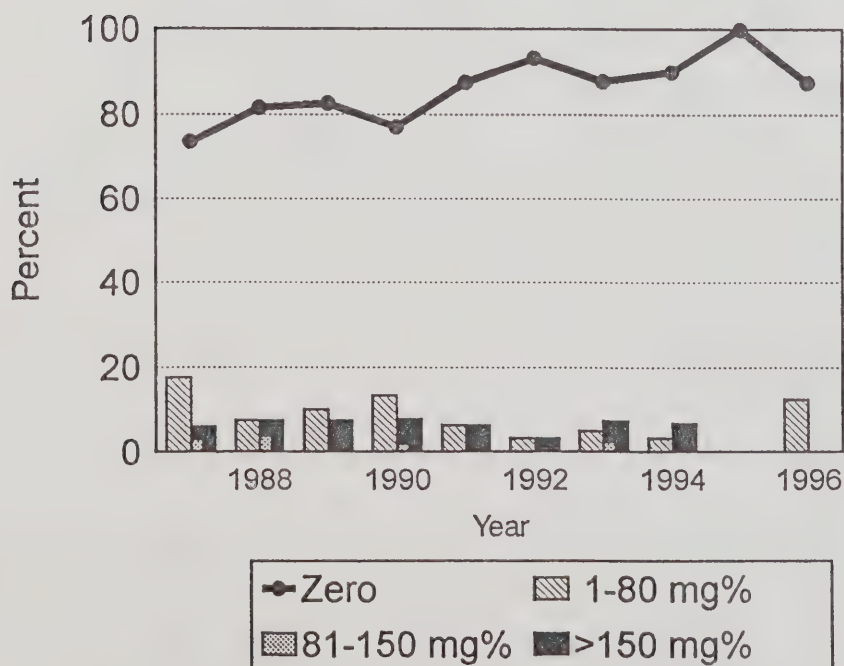


Table 3-7

Alcohol Use Among Fatally Injured Pedestrians:  
Age of Pedestrians  
(Canada, 1996)

<u>AGE</u>	<u>Number of Pedestrians</u>	<u>Pedestrians Tested (% of total)</u>	<u>Pedestrians Grouped by BAC (mg%)</u> (% of tested)				
			<u>Zero</u>	<u>1-49</u>	<u>50-80</u>	<u>81-150</u>	<u>&gt;150</u>
<16	71	12 (16.9)	11 (91.7)	0 (0.0)	0 (0.0)	0 (0.0)	1 (8.3)
16-17	13	10 (76.9)	5 (50.0)	0 (0.0)	0 (0.0)	2 (20.0)	3 (30.0)
18-19	17	15 (88.2)	6 (40.0)	0 (0.0)	2 (13.3)	2 (13.3)	5 (33.3)
20-25	48	42 (87.5)	17 (40.5)	3 (7.1)	0 (0.0)	6 (14.3)	16 (38.1)
26-35	60	45 (75.0)	14 (31.1)	5 (11.1)	1 (2.2)	4 (8.9)	21 (46.7)
36-45	57	44 (77.2)	19 (43.2)	0 (0.0)	0 (0.0)	5 (11.4)	20 (45.5)
46-55	61	40 (65.6)	26 (65.0)	0 (0.0)	0 (0.0)	3 (7.5)	11 (27.5)
>55	221	117 (52.9)	96 (82.1)	2 (1.7)	0 (0.0)	2 (1.7)	17 (14.5)
TOTAL	548	325 (59.3)	194 (59.7)	10 (3.1)	3 (0.9)	24 (7.4)	94 (28.9)

Figure 3-15  
Percent of Testing for Alcohol  
Among Pedestrians of Various Ages: 1996

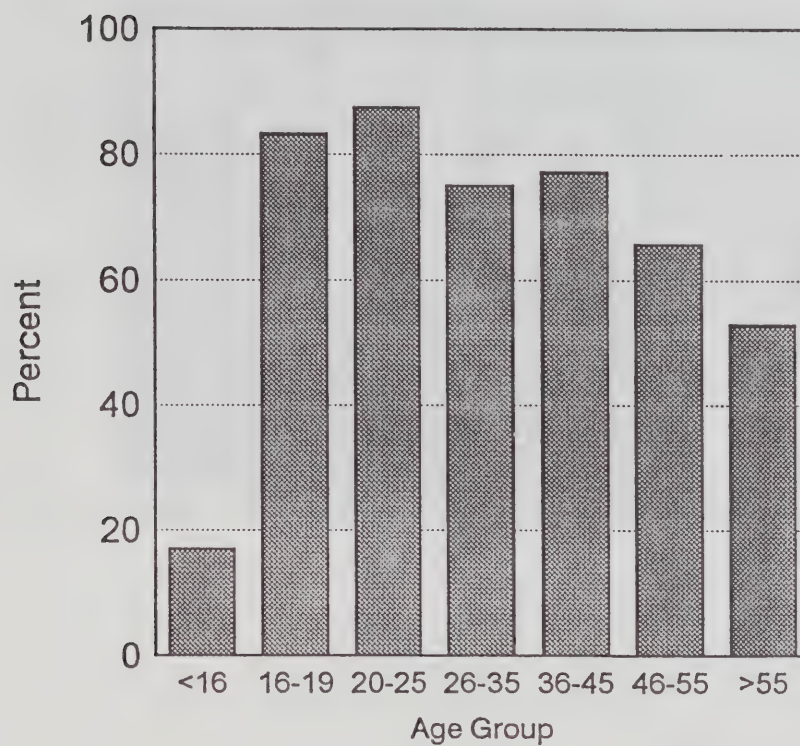




Figure 3-16  
Alcohol Use and Age of Pedestrian  
Canada, 1996

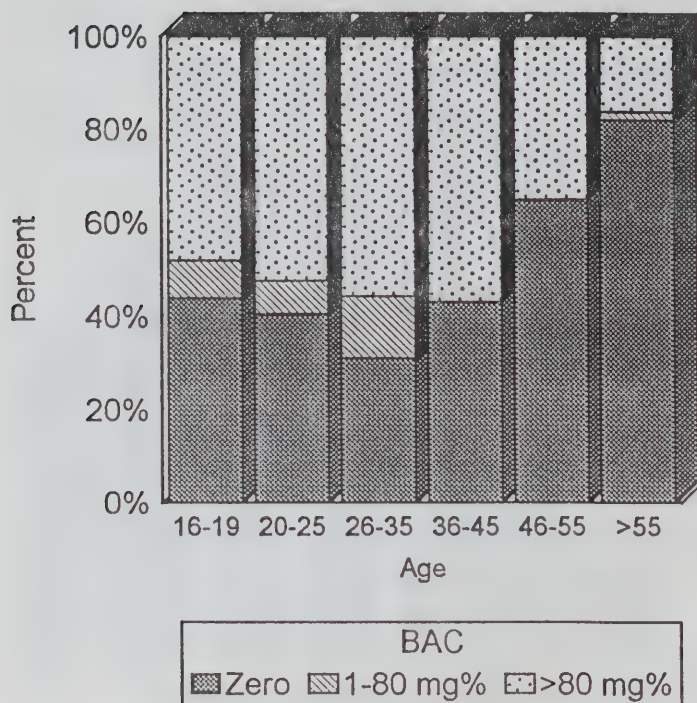
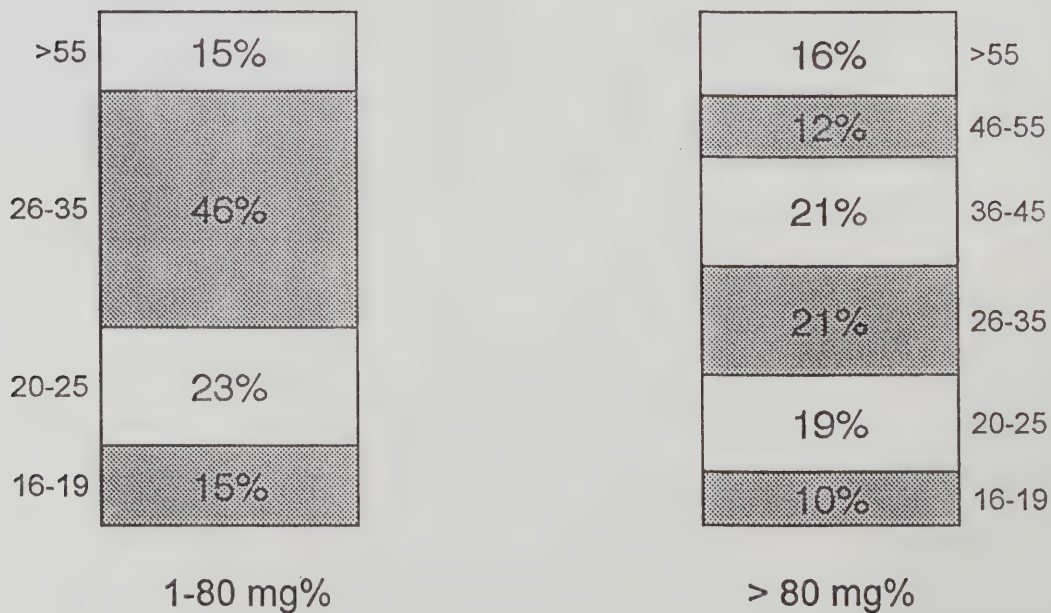


Figure 3-17  
Proportion of Drinking Pedestrians by Age  
Canada, 1996

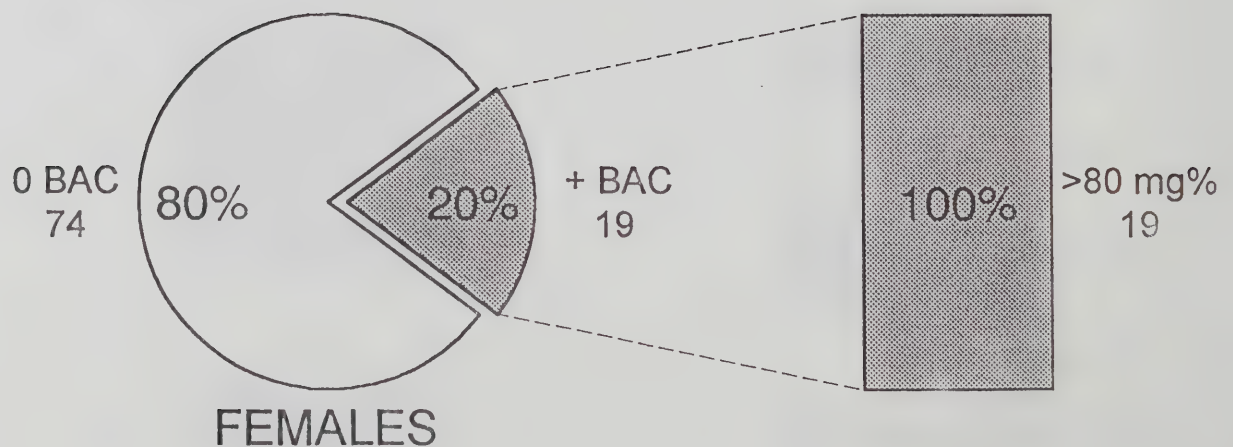
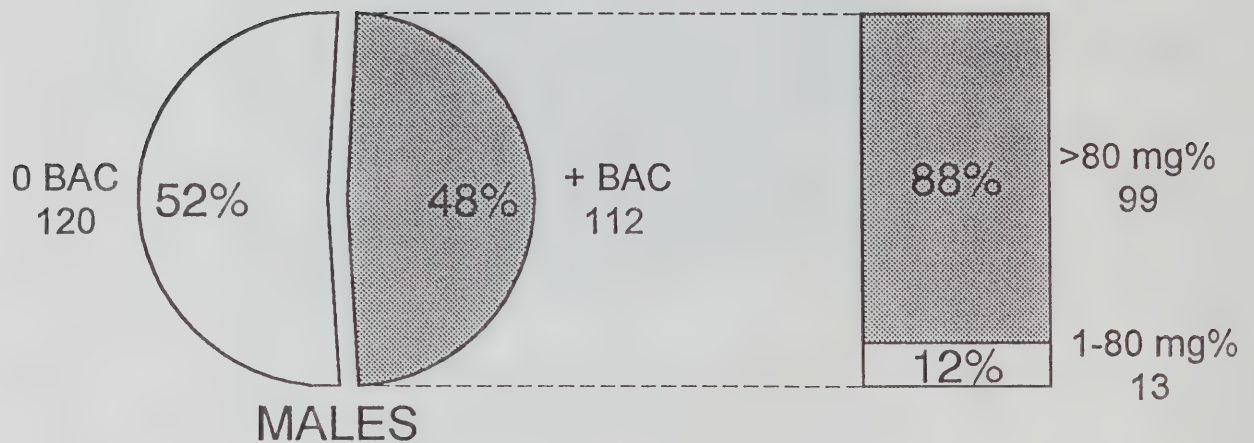


**Table 3-8**

Alcohol Use Among Fatally Injured Pedestrians:  
Sex of Pedestrians  
(Canada, 1996)

<u>SEX</u>	<u>Number of Pedestrians</u>	<u>Pedestrians Tested (% of total)</u>	<u>Pedestrians Grouped by BAC (mg%)</u> (% of tested)				
			<u>Zero</u>	<u>1-49</u>	<u>50-80</u>	<u>81-150</u>	<u>&gt;150</u>
MALE	357	232 (65.0)	120 (51.7)	10 (4.3)	3 (1.3)	19 (8.2)	80 (34.5)
FEMALE	191	93 (48.7)	74 (79.6)	0 (0.0)	0 (0.0)	5 (5.4)	14 (15.1)
TOTAL	548	325 (59.3)	194 (59.7)	10 (3.1)	3 (0.9)	24 (7.4)	94 (28.9)

Figure 3-18  
Alcohol Use Among Male and Female  
Pedestrians: Canada, 1996





**Table 3-9**

**Alcohol Use Among Fatally Injured Pedestrians:  
by Jurisdiction: 1996**

<u>JURISDICTION</u>	<u>Number of Pedestrians</u>	<u>Pedestrians Tested (% of total)</u>	<u>Pedestrians Grouped by BAC (mg%)</u> (% of tested)				
			<u>Zero</u>	<u>1-49</u>	<u>50-80</u>	<u>81-150</u>	<u>&gt;150</u>
British Columbia	79	56 (70.9)	33 (58.9)	0 (0.0)	0 (0.0)	3 (5.4)	20 (35.7)
Alberta	40	31 (77.5)	13 (41.9)	3 (9.7)	0 (0.0)	1 (3.2)	14 (45.2)
Saskatchewan	19	15 (78.9)	7 (46.7)	0 (0.0)	1 (6.7)	2 (13.3)	5 (33.3)
Manitoba	18	15 (83.3)	12 (80.0)	0 (0.0)	0 (0.0)	1 (6.7)	2 (13.3)
Ontario	181	105 (58.0)	63 (60.0)	4 (3.8)	1 (1.0)	9 (8.6)	28 (26.7)
Quebec	147	67 (45.6)	45 (67.2)	2 (3.0)	1 (1.5)	5 (7.5)	14 (20.9)
New Brunswick	20	11 (55.0)	7 (63.6)	0 (0.0)	0 (0.0)	2 (18.2)	2 (18.2)
Nova Scotia	18	12 (66.7)	7 (58.3)	0 (0.0)	0 (0.0)	0 (0.0)	5 (41.7)
Prince Edward Island	2	1 (50.0)	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Newfoundland	18	9 (50.0)	6 (66.7)	0 (0.0)	0 (0.0)	1 (11.1)	2 (22.2)
Yukon and NWT*	6	3 (50.0)	0 (0.0)	1 (33.3)	0 (0.0)	0 (0.0)	2 (66.7)
<b>TOTAL</b>	<b>548</b>	<b>325 (59.3)</b>	<b>194 (59.7)</b>	<b>10 (3.1)</b>	<b>3 (0.9)</b>	<b>24 (7.4)</b>	<b>94 (28.9)</b>

\* The pedestrians for these two jurisdictions have been aggregated to ensure that the BAC of one of the pedestrians cannot be identified.

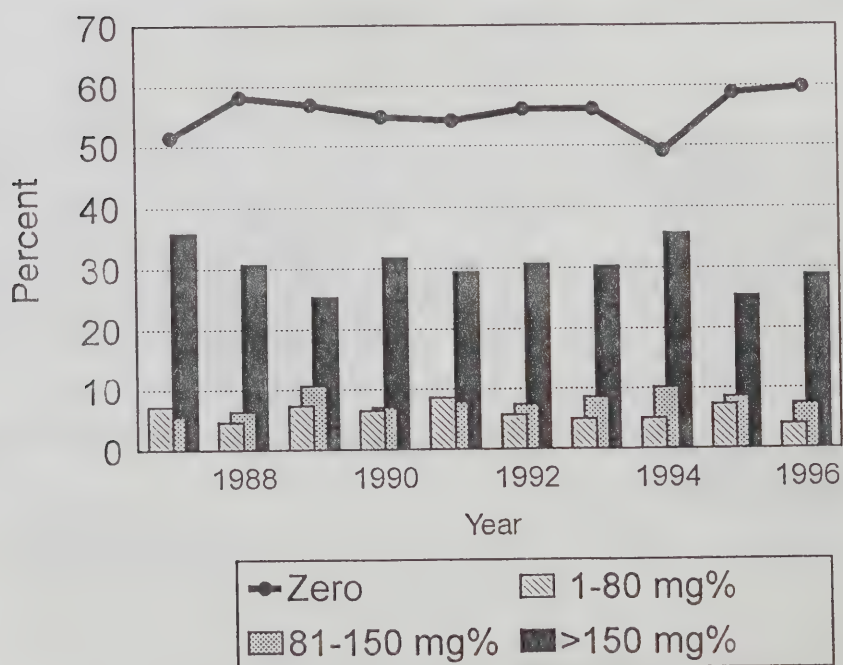
Table 3-10

Alcohol Use Among Fatally Injured Pedestrians  
Canada, 1987-1996

Pedestrians Grouped by BAC (mg%)

YEAR	Number of Pedestrians	Number Tested	Percent Tested	Zero BAC		1-80 BAC		81-150 BAC		>150 BAC	
				No.	% Tested	No.	% Tested	No.	% Tested	No.	% Tested
1987	760	414	54.5	213	51.4	30	7.2	23	5.6	148	35.7
1988	748	358	47.9	208	58.1	17	4.7	23	6.4	110	30.7
1989	676	368	54.4	209	56.8	27	7.3	39	10.6	93	25.3
1990	683	356	52.1	195	54.8	23	6.5	25	7.0	113	31.7
1991	598	347	58.0	188	54.2	30	8.6	27	7.8	102	29.4
1992	522	296	56.7	166	56.1	17	5.7	22	7.4	91	30.7
1993	551	301	54.6	169	56.1	15	5.0	26	8.6	91	30.2
1994	517	295	57.1	145	49.2	15	5.1	30	10.2	105	35.6
1995	493	303	61.5	178	58.7	22	7.3	26	8.6	77	25.4
1996	548	325	59.3	194	59.7	13	4.0	24	7.4	94	28.9

Figure 3-19  
Trends in Alcohol Use Among  
Pedestrian Fatalities: 1987-1996



## INTRODUCTION TO SECTIONS 4.0 TO 15.0

The previous section of this report provided national results on alcohol use by fatally injured drivers. As described in Section 3.1.5, *Jurisdictional Differences*, the general results in several jurisdictions -- Alberta, Saskatchewan, Ontario, Quebec, New Brunswick and Nova Scotia -- are similar to Canada overall. Differences, however, are apparent in other jurisdictions. The pattern of results related to age, gender, vehicle and collision type, and trends in each jurisdiction may also differ from the national results. Accordingly, the following sections of this report provide results on alcohol use by fatally injured drivers for each of the provinces and territories. A common format is used for the presentation in each case. First, general descriptive data on the incidence of alcohol among fatally injured drivers are presented, focusing on differences associated with the age and gender of driver, the type of vehicle being operated, and the type of collision. Second, trends in alcohol use among fatally injured drivers (who died less than 6 hours after being involved in a crash) are examined. More specifically, the trends being examined are based on the percent of fatally injured drivers who have been drinking or the percent at various levels of BAC. The rationale for this approach was described previously (see section 3.2). Briefly, if the proportion of fatally injured drinking drivers is declining, it suggests that the incidence of alcohol-related fatalities is decreasing relatively more than non-alcohol related ones. In other words, it suggests that countermeasures targeted specifically at drinking drivers may be having an impact.

In each of the following sections, the total number of fatally injured drivers shown at the bottom of the tables will differ due to different selection criteria (e.g., drivers of buses are included in the age and gender tables but not the vehicle tables). The selection criteria are identified in each table.

Finally, in many cases the number of victims in various subgroups are extremely small. *Caution must be exercised in drawing conclusions about differences based on only a few cases.* In addition, because of the small number of victims in some jurisdictions, categories or groups of drivers have been collapsed (e.g., a larger age range is displayed



-- the two age groups 16 to 19 and 20 to 24 are combined to form a 16 to 24 age category) to ensure that demographic or crash characteristics cannot be used to identify an individual driver and determine their BAC.

## **4.0 BRITISH COLUMBIA:**

### **Alcohol Use Among Fatally Injured Drivers**

This portion of the report contains a brief review of the major findings regarding alcohol use among drivers fatally injured in traffic collisions in British Columbia.

The first section provides a review of general findings for 1996, and the second section examines trends in alcohol use among driver fatalities.

#### **4.1 GENERAL FINDINGS: 1996**

Tables 4-1 to 4-4 contain the data on which the various figures in this section are based. Table 4-1 contains information on alcohol use by drivers of various age groups; Table 4-2 compares male and female drivers; Table 4-3 provides information on alcohol use by drivers of different types of vehicles; and Table 4-4 shows alcohol levels found in drivers involved in single- and multiple-vehicle collisions.

Each table shows the number of drivers killed, the number and percent who were tested for alcohol, and the results of those tests -- this includes the number and percent of the tested drivers who showed no evidence of alcohol as well as the number and percent who were positive for alcohol in each of four BAC ranges.

**4.1.1 Rates of Testing for Alcohol.** British Columbia had a high testing rate in 1996, with 89.1% of fatally injured drivers being tested for the presence of alcohol (see Table 4-1).

**4.1.2 Incidence of Alcohol.** As the totals at the bottom of Table 4-1 indicate, among tested drivers in British Columbia:

- o 50.2% showed no evidence of alcohol;
- o 4.1% had BACs below 50 mg%;

- o 3.6% had BACs from 50 to 80 mg%;
- o 9.0% had BACs from 81 to 150 mg%; and,
- o 33.0% had BACs over 150 mg%.

Thus, 50% of fatally injured drivers in British Columbia had been drinking and most of these had illegal BACs.

*o Age.* Table 4-1 and Figure 4-1 show the incidence of alcohol among drivers of various ages. For each age group, the solid portion of the bar indicates the percent of drivers in that age group who were sober. As can be seen, drivers age 20-25 were the least likely to be sober -- the most likely to have been drinking; only 26% were sober -- 74% of drivers in this age group had been drinking. By contrast, the vast majority of drivers over the age of 55 (73%) showed no evidence of alcohol.

Figure 4-2 shows the proportion of drinking drivers accounted for by each age group. The left bar indicates the percent of drinking drivers with BACs of 80 mg% or less accounted for by each age group. On the right are comparable data for drivers with BACs over the statutory limit. As can be seen, drivers age 20-25 account for 31% of those with BACs below 80 mg%. They also account for 29% of fatally injured drinking drivers with BACs over 80 mg%.

*o Gender.* As shown in Table 4-2 and Figure 4-3, alcohol use was related to the *gender of the driver*. Fatally injured male drivers were far more likely to have been drinking than female drivers (54% and 31%, respectively). Among those who were drinking, drivers with BACs over the legal limit were far more prevalent in both groups. Among fatally injured drinking drivers, 84% of males had BACs over 80 mg%; while 91% of females had BACs over the statutory limit.

*o Type of Vehicle.* Alcohol use varied as a function of the *type of vehicle* being operated, as shown in Table 4-3 and illustrated in Figures 4-4a and 4-4b. About 44% of fatally injured drivers of automobiles, 60% of trucks/vans and 75% of motorcycle riders were found to have been drinking. Alcohol was not detected in any



of the eight tractor-trailer drivers. Of the fatally injured drinking drivers, 93 % who were operating trucks/vans had BACs over the legal limit, as did 84 % of automobile drivers and 58 % of motorcyclists.

*o Type of Collision.* The incidence of alcohol also varied as a function of *type of collision* (see Table 4-4). Alcohol was found far more often in drivers involved in single-vehicle collisions than among those involved in multiple-vehicle collisions. As shown in Figure 4-5, some 61 % of the drivers involved in single-vehicle crashes were positive for alcohol, compared to only 35 % in multiple-vehicle collisions. Higher BACs were more characteristic of single-vehicle crashes - 87 % of the drinking drivers in single-vehicle crashes had BACs over the legal limit, compared to 79 % in multiple-vehicle crashes.

## 4.2 TRENDS IN ALCOHOL USE AMONG DRIVERS

Data on alcohol use among fatally injured drivers over the 10-year period from 1987 to 1996 are shown in Table 4-5. Trends are illustrated in Figure 4-6 which shows changes in the percent of fatally injured drivers who: (1) showed no evidence of alcohol (represented by the line); (2) had BACs below the legal limit (shown by the striped bars); and, (3) had BACs over the legal limit (the solid bars).

As can be seen, the percent of fatally injured drivers with BACs over 80 mg% was relatively constant between 1987 and 1991 before peaking in 1993. The percent of fatally injured drivers with BACs over 80 mg% has fluctuated since then, dropping slightly from 1995 to 1996. The percent of fatally injured drivers with low BACs (1-80 mg%) has decreased since 1994. The percent of fatally injured drivers who were sober decreased from 1994 to 1995 but then increased slightly in 1996.

**Table 4-1**

Alcohol Use Among Fatally Injured Drivers:  
Age of Drivers  
(British Columbia, 1996)

AGE	Number Of Drivers*	Drivers Tested (% of total)	Drivers Grouped by BAC (mg%) (% of tested)				
			Zero	1-49	50-80	81-150	>150
<18	6	6 (100.0)	2 (33.3)	1 (16.7)	1 (16.7)	2 (33.3)	0 (0.0)
18-19	15	13 (86.7)	7 (53.8)	1 (7.7)	1 (7.7)	0 (0.0)	4 (30.8)
20-25	44	43 (97.7)	11 (25.6)	1 (2.3)	4 (9.3)	4 (9.3)	23 (53.5)
26-35	52	49 (94.2)	23 (46.9)	1 (2.0)	1 (2.0)	7 (14.3)	17 (34.7)
36-45	41	33 (80.5)	15 (45.5)	3 (9.1)	1 (3.0)	0 (0.0)	14 (42.4)
46-55	42	37 (88.1)	24 (64.9)	0 (0.0)	0 (0.0)	3 (8.1)	10 (27.0)
>55	48	40 (83.3)	29 (72.5)	2 (5.0)	0 (0.0)	4 (10.0)	5 (12.5)
<b>TOTAL</b>	<b>248</b>	<b>221 (89.1)</b>	<b>111 (50.2)</b>	<b>9 (4.1)</b>	<b>8 (3.6)</b>	<b>20 (9.0)</b>	<b>73 (33.0)</b>

\* Excludes operators of bicycles, snowmobiles, farm tractors, and other non-highway vehicles.

Figure 4-1  
Alcohol Use and Age of Driver  
British Columbia, 1996

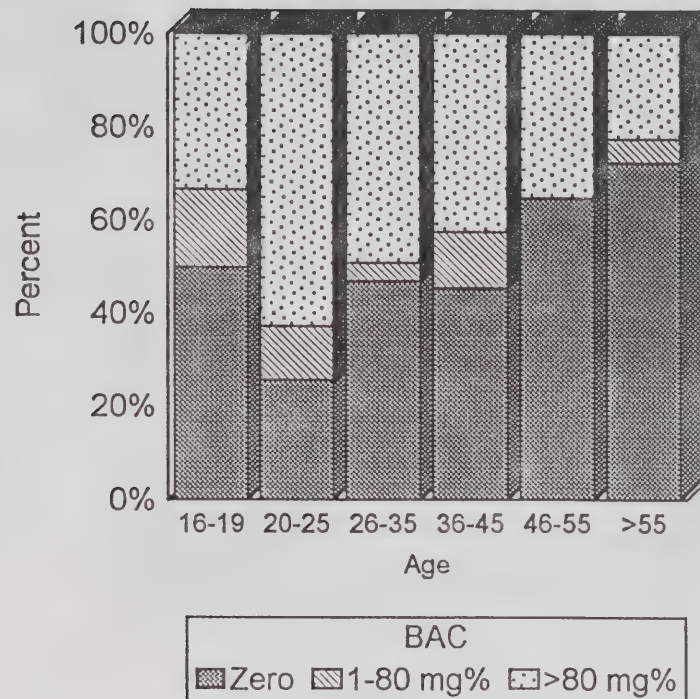
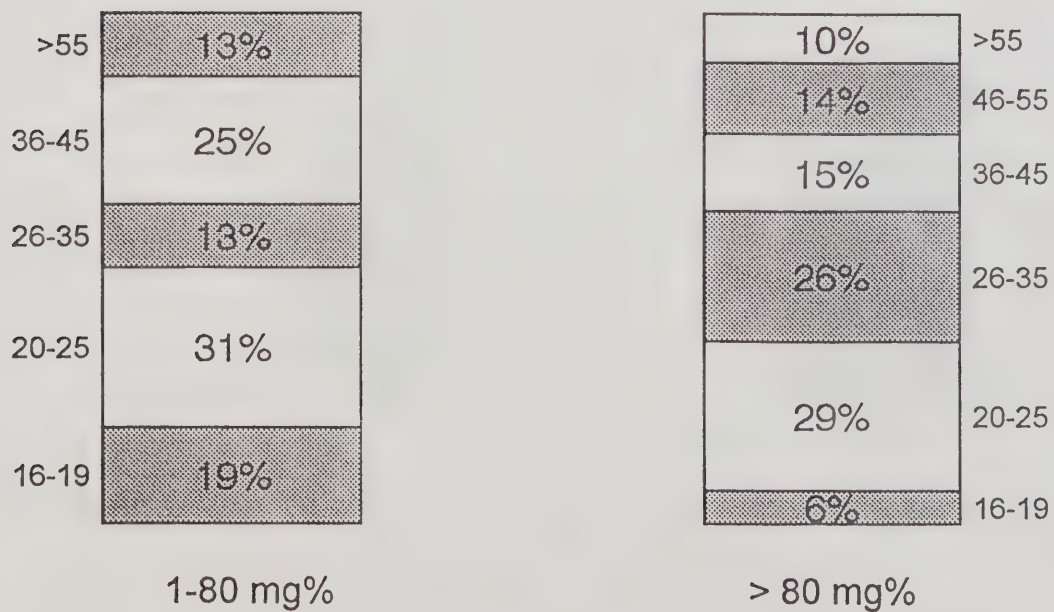


Figure 4-2  
Proportion of Drinking Drivers by Age  
British Columbia, 1996



**Table 4-2**

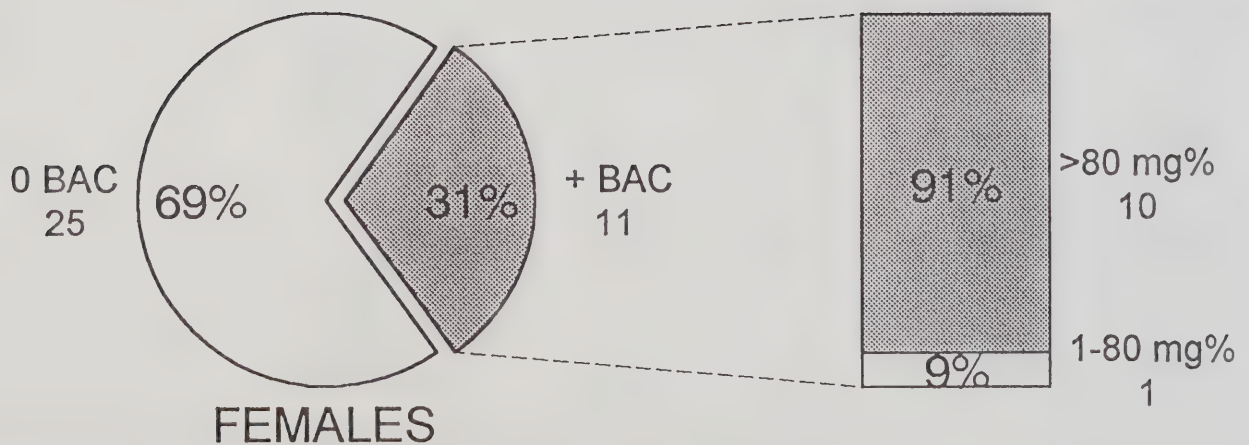
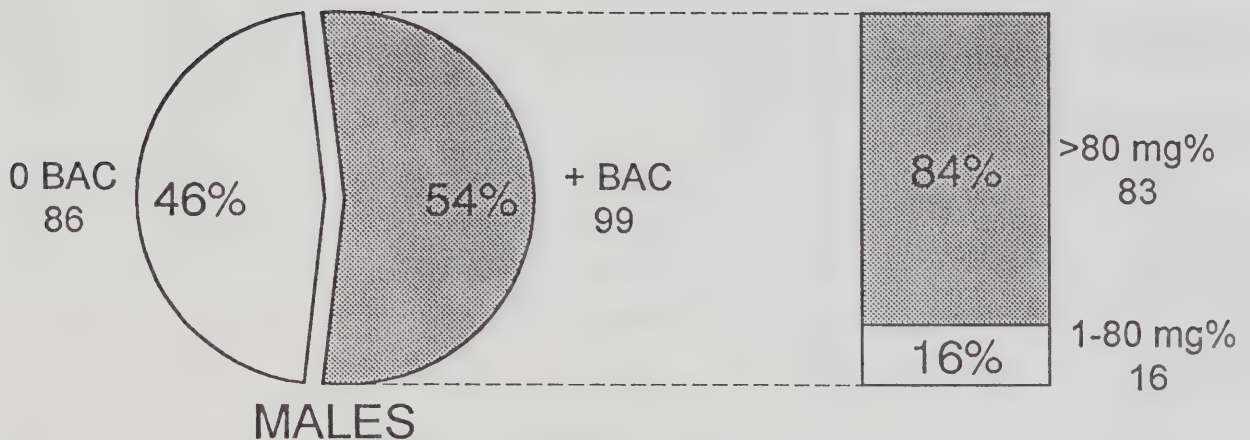
Alcohol Use Among Fatally Injured Drivers:  
Sex of Drivers  
(British Columbia, 1996)

SEX	Number Of Drivers*	Drivers Tested (% of total)	Drivers Grouped by BAC (mg%) (% of tested)				
			Zero	1-49	50-80	81-150	>150
MALE	206	185 (89.8)	86 (46.5)	8 (4.3)	8 (4.3)	18 (9.7)	65 (35.1)
FEMALE	42	36 (85.7)	25 (69.4)	1 (2.8)	0 (0.0)	2 (5.6)	8 (22.2)
TOTAL	248	221 (89.1)	111 (50.2)	9 (4.1)	8 (3.6)	20 (9.0)	73 (33.0)

\* Excludes operators of bicycles, snowmobiles, farm tractors, and other non-highway vehicles.



Figure 4-3  
Alcohol Use Among Male and Female  
Drivers: British Columbia, 1996



**Table 4-3**

Alcohol Use Among Fatally Injured Drivers:  
Type of Vehicle Operated

VEHICLE TYPE	Number Of Drivers*	Drivers Tested (% of total)	Drivers Grouped by BAC (mg%) (% of tested)				
			Zero	1-49	50-80	81-150	>150
AUTO	141	125 (88.7)	70 (56.0)	5 (4.0)	4 (3.2)	8 (6.4)	38 (30.4)
TRUCK-VAN	77	72 (93.5)	29 (40.3)	1 (1.4)	2 (2.8)	11 (15.3)	29 (40.3)
MOTORCYCLE	20	16 (80.0)	4 (25.0)	3 (18.8)	2 (12.5)	1 (6.3)	6 (37.5)
TRACTOR- TRAILER	9	8 (88.9)	8 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
TOTAL	247	221 (89.5)	111 (50.2)	9 (4.1)	8 (3.6)	20 (9.0)	73 (33.0)

**Table 4-4**

Alcohol Use Among Fatally Injured Drivers:  
Type of Collision

COLLISION TYPE	Number Of Drivers*	Drivers Tested (% of total)	Drivers Grouped by BAC (mg%) (% of tested)				
			Zero	1-49	50-80	81-150	>150
SINGLE- VEHICLE	137	125 (91.2)	49 (39.2)	5 (4.0)	5 (4.0)	15 (12.0)	51 (40.8)
MULTIPLE- VEHICLE	111	96 (86.5)	62 (64.6)	4 (4.2)	3 (3.1)	5 (5.2)	22 (22.9)
TOTAL	248	221 (89.1)	111 (50.2)	9 (4.1)	8 (3.6)	20 (9.0)	73 (33.0)

\* Excludes operators of bicycles, snowmobiles, farm tractors, and other non-highway vehicles.

Figure 4-4a  
Alcohol Use Among Drivers of Different  
Vehicle Types: British Columbia, 1996

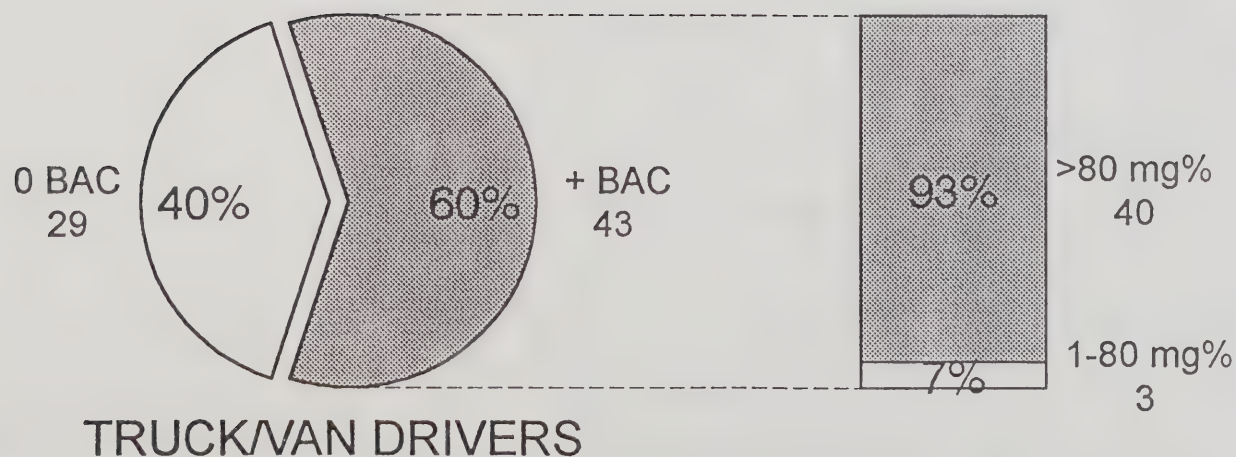
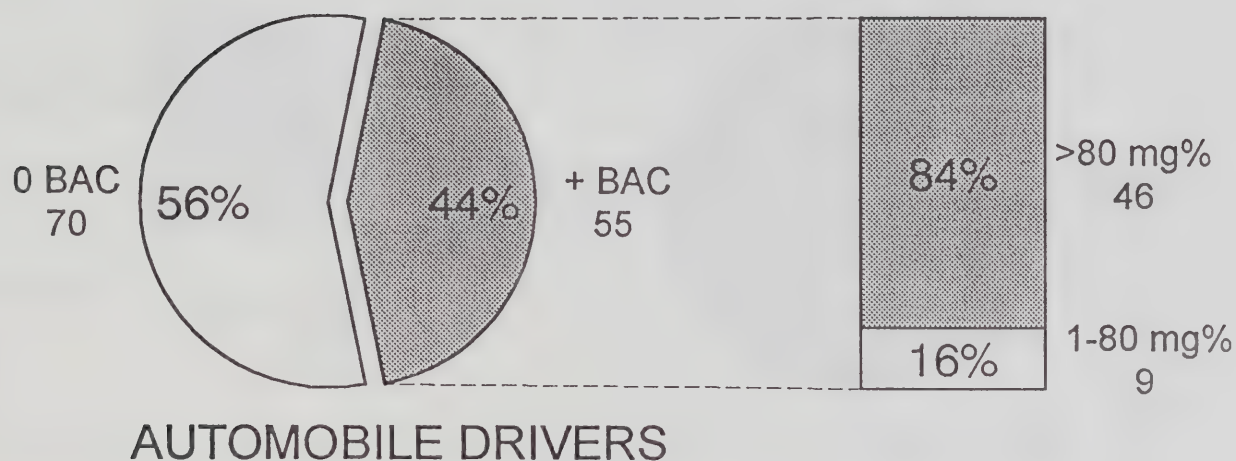
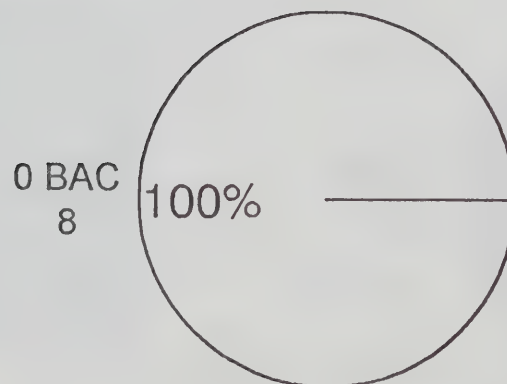
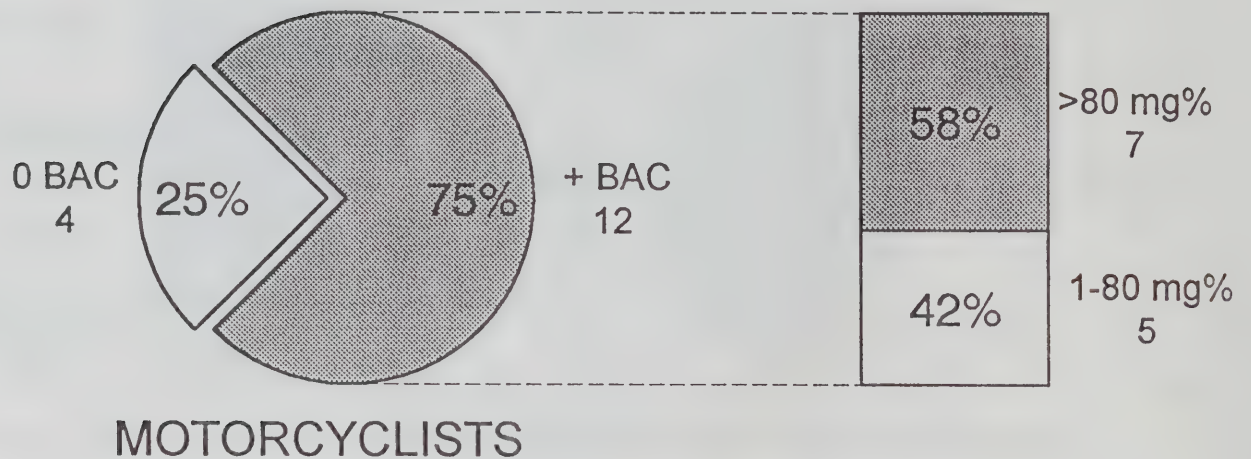


Figure 4-4b  
Alcohol Use Among Drivers of Different  
Vehicle Types: British Columbia, 1996



TRACTOR-TRAILER DRIVERS



Figure 4-5  
Alcohol Use Among Drivers: Type of  
Collision: British Columbia, 1996

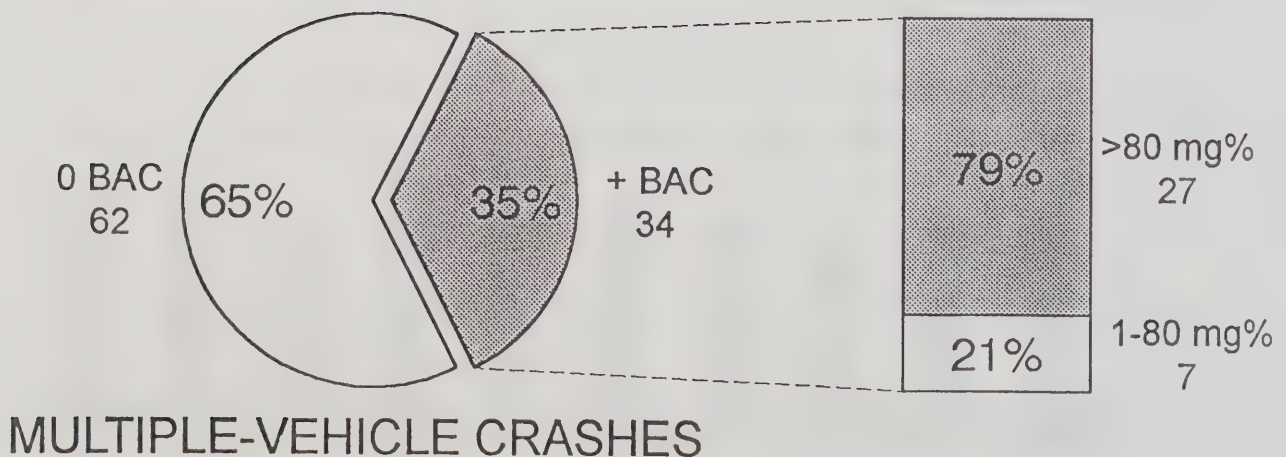
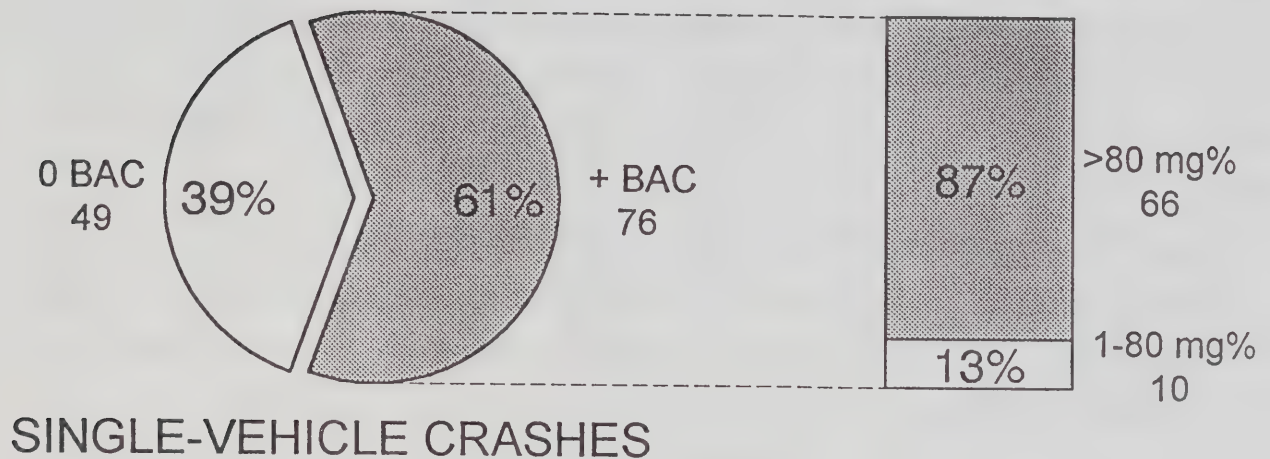


Table 4-5

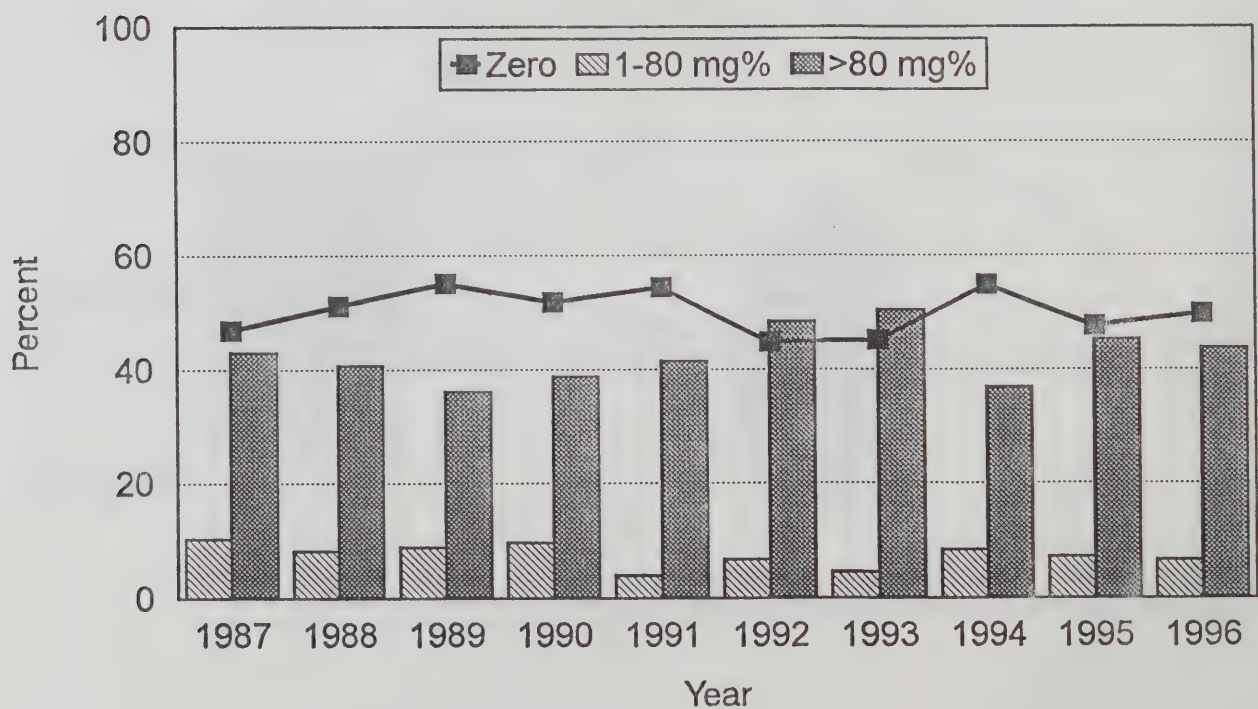
Alcohol Use Among Fatally Injured Drivers:  
British Columbia, 1987-1996

YEAR	Number Of Drivers*	Drivers Tested	(% Total)	Drivers Grouped by BAC (mg%)					
				Zero	(% Tested)	1-80	(% Tested)	>80	(% Tested)
1987	267	265	99.3	124	46.8	27	10.2	114	43.0
1988	284	270	95.1	138	51.1	22	8.1	110	40.7
1989	256	249	97.3	137	55.0	22	8.8	90	36.1
1990	288	282	97.9	146	51.8	27	9.6	109	38.7
1991	252	248	98.4	135	54.4	10	4.0	103	41.5
1992	233	223	95.7	100	44.8	15	6.7	108	48.4
1993	232	224	96.6	101	45.1	10	4.5	113	50.4
1994	260	252	96.9	138	54.8	21	8.3	93	36.9
1995	238	225	94.5	107	47.6	16	7.1	102	45.3
1996	202	197	97.5	98	49.7	13	6.6	86	43.7

\* dying in less than six hours.

Figure 4-6

Trends in Alcohol Use Among Driver  
Fatalities: British Columbia, 1987-1996



## **5.0 ALBERTA:**

### **Alcohol Use Among Fatally Injured Drivers**

This portion of the report contains a brief review of the major findings regarding alcohol use among drivers fatally injured in traffic collisions in Alberta.

The first section provides a review of general findings for 1996, and the second section examines trends in alcohol use among driver fatalities.

#### **5.1 GENERAL FINDINGS: 1996**

Tables 5-1 to 5-4 contain the data on which the various figures in this section are based. Table 5-1 contains information on alcohol use by drivers of various age groups; Table 5-2 compares male and female drivers; Table 5-3 provides information on alcohol use by drivers of different types of vehicles; and Table 5-4 shows alcohol levels found in drivers involved in single- and multiple-vehicle collisions.

Each table shows the number of drivers killed, the number and percent who were tested for alcohol, and the results of those tests -- this includes the number and percent of the tested drivers who showed no evidence of alcohol as well as the number and percent who were positive for alcohol in each of four BAC levels.

**5.1.1 Rates of Testing for Alcohol.** Alberta had a very high testing rate in 1996, with 93.7% of fatally injured drivers being tested for the presence of alcohol (see Table 5-1).

**5.1.2 Incidence of Alcohol.** As the totals at the bottom of Table 5-1 indicate, among tested drivers in Alberta:

- o 62.7% showed no evidence of alcohol;
- o 5.7% had BACs below 50 mg%;



- o 1.0% had BACs from 50 to 80 mg%;
- o 8.3% had BACs from 81 to 150 mg%; and,
- o 22.3% had BACs over 150 mg%.

Thus, 37% of fatally injured drivers in Alberta had been drinking and most of these had illegal BACs.

o *Age.* Table 5-1 and Figure 5-1 show the incidence of alcohol among drivers of various ages. For each age group, the solid portion of the bar indicates the percent of drivers in that age group who were sober. As can be seen, drivers age 20-25 were the least likely to be sober and the most likely to have been drinking: 36% of drivers age 20-25 were sober; 64% had been drinking. By contrast, a large majority of drivers (79%) over the age of 55 showed no evidence of alcohol.

Figure 5-2 shows the proportion of drinking drivers accounted for by each age group. The left bar indicates the percent of drinking drivers with BACs of 80 mg% or less accounted for by each age group. On the right are comparable data for drivers with BACs over the statutory limit. As can be seen, drivers age 20-25 account for 31% of the drinking drivers with BACs under the legal limit. They also account for 29% of those with BACs over 80 mg%.

o *Gender.* As shown in Table 5-2 and Figure 5-3, alcohol use was related to the *gender of the driver*. Fatally injured male drivers were far more likely to have been drinking than female drivers (43% and 15%, respectively). Among those who were drinking, drivers with BACs over the legal limit were far more prevalent in both groups. Among fatally injured drinking drivers, 83% of the males had BACs over 80 mg%; and 67% of the females had BACs over the statutory limit.

o *Type of Vehicle.* Alcohol use varied as a function of the *type of vehicle* being operated, as shown in Table 5-3 and illustrated in Figures 5-4a and 5-4b. Some 33% of fatally injured drivers of automobiles were found to have been drinking. Alcohol was more often detected in operators of trucks/vans (41%) and motorcycles (45%). One of the four (25%) tractor-trailer drivers had been drinking. Of the fatally injured



drinking motorcyclists, 80% had BACs over the legal limit as did 81% of automobile drivers and 85% of truck/van drivers.

*o Type of Collision.* The incidence of alcohol also varied as a function of *type of collision* (see Table 5-4). Alcohol was found far more often in drivers involved in single-vehicle collisions than among those involved in multiple-vehicle collisions. As shown in Figure 5-5, some 53% of the drivers involved in single-vehicle crashes were positive for alcohol, compared to only 27% in multiple-vehicle collisions. Higher BACs were more characteristic of single-vehicle crashes -- 90% of the drinking drivers in single-vehicle crashes had BACs over the legal limit, compared to 70% in multiple-vehicle crashes.

## 5.2 TRENDS IN ALCOHOL USE AMONG DRIVERS

Data on alcohol use among fatally injured drivers over the ten-year period from 1987-1996 are shown in Table 5-5. Trends are illustrated in Figure 5-6 which shows changes in the percent of fatally injured drivers who: (1) showed no evidence of alcohol (represented by the line); (2) had BACs below the legal limit (shown by the striped bars); and (3) had BACs over the legal limit (the solid bars).

Since 1987, the percent of fatally injured drivers with BACs over the legal limit has generally declined reaching its lowest level in 1993. The percent of fatally injured drivers who were sober reached its highest level in 1995 and then declined in 1996. Since 1994, the percent of drivers with BACs from 1-80 mg% has increased.

**Table 5-1**

**Alcohol Use Among Fatally Injured Drivers:  
Age of Drivers  
(Alberta, 1996)**

AGE	Number Of Drivers*	Drivers Tested (% of total)	Drivers Grouped by BAC (mg%) (% of tested)				
			Zero	1-49	50-80	81-150	>150
<16	3	3 (100.0)	3 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
16-17	16	15 (93.8)	11 (73.3)	0 (0.0)	0 (0.0)	1 (6.7)	3 (20.0)
18-19	15	15 (100.0)	11 (73.3)	1 (6.7)	0 (0.0)	1 (6.7)	2 (13.3)
20-25	33	33 (100.0)	12 (36.4)	3 (9.1)	1 (3.0)	7 (21.2)	10 (30.3)
26-35	39	37 (94.9)	21 (56.8)	2 (5.4)	1 (2.7)	2 (5.4)	11 (29.7)
36-45	39	38 (97.4)	24 (63.2)	3 (7.9)	0 (0.0)	3 (7.9)	8 (21.1)
46-55	25	23 (92.0)	16 (69.6)	0 (0.0)	0 (0.0)	2 (8.7)	5 (21.7)
>55	36	29 (80.6)	23 (79.3)	2 (6.9)	0 (0.0)	0 (0.0)	4 (13.8)
TOTAL	206	193 (93.7)	121 (62.7)	11 (5.7)	2 (1.0)	16 (8.3)	43 (22.3)

\* Excludes operators of bicycles, snowmobiles, farm tractors, and other non-highway vehicles.

Figure 5-1  
Alcohol Use and Age of Driver  
Alberta, 1996

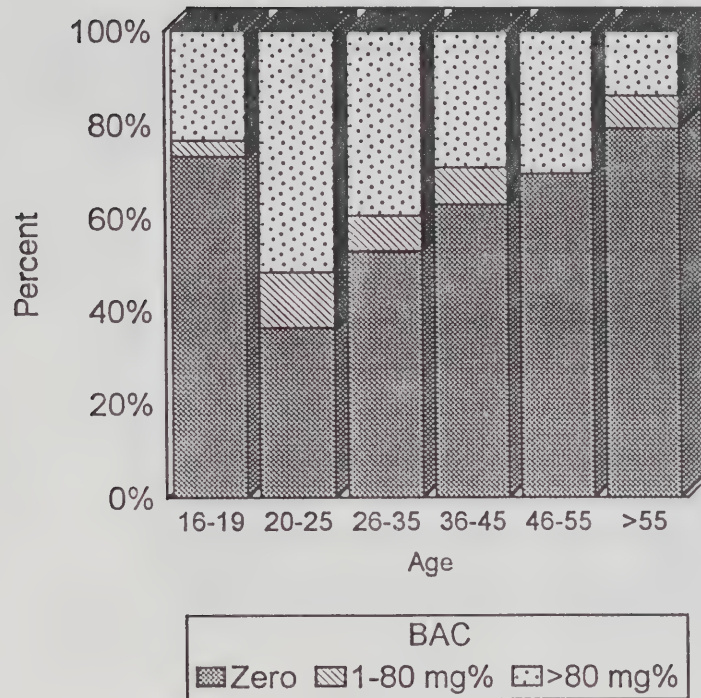
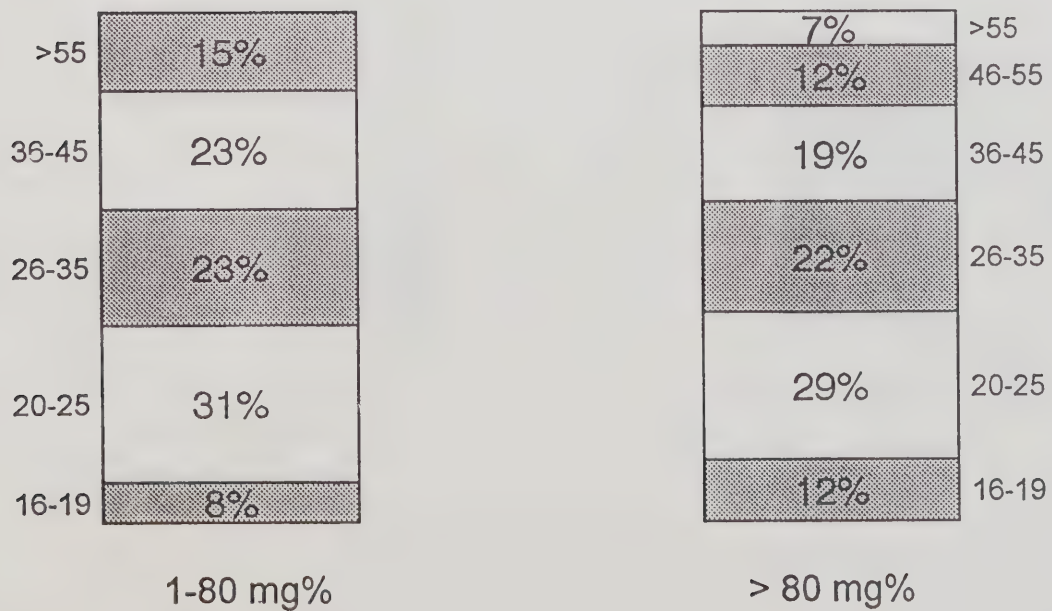


Figure 5-2  
Proportion of Drinking Drivers by Age  
Alberta, 1996



**Table 5-2**

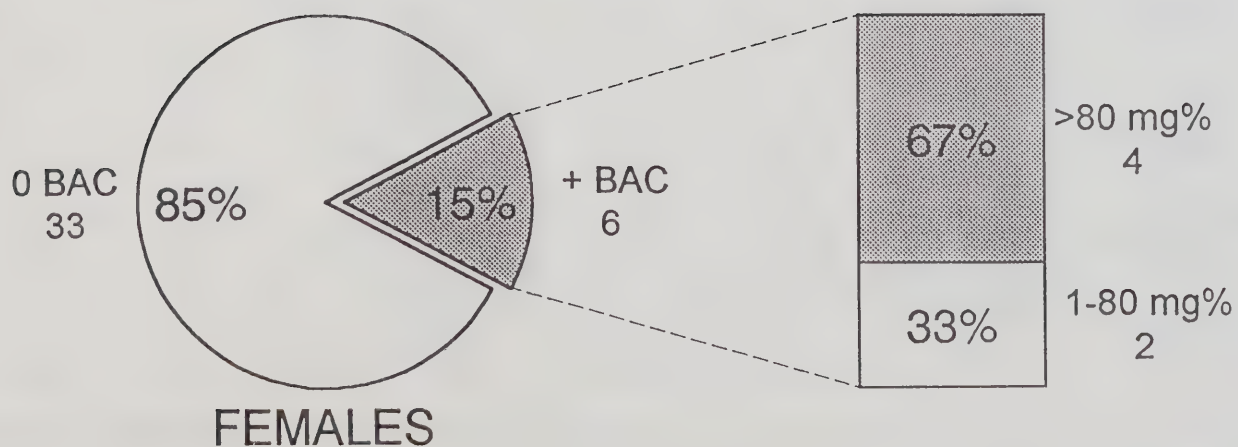
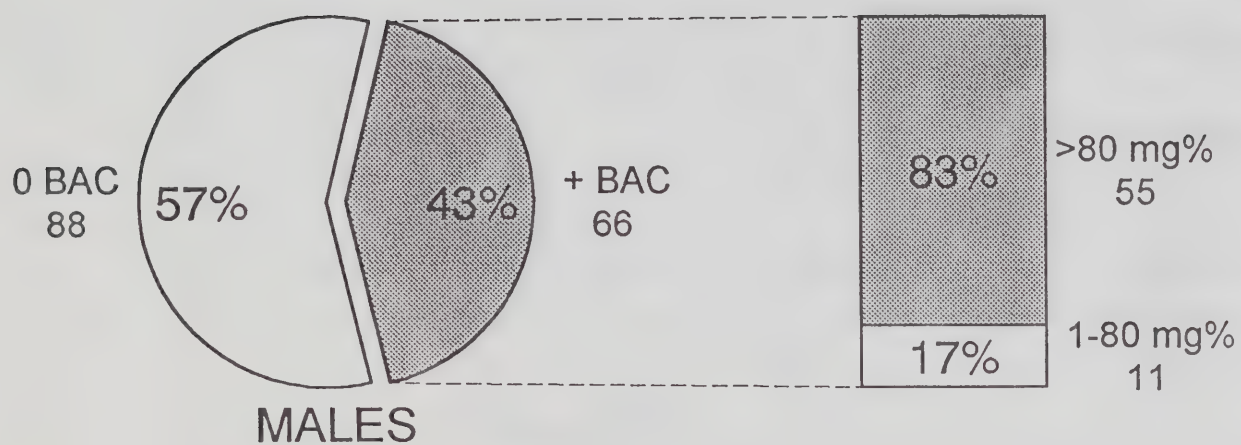
Alcohol Use Among Fatally Injured Drivers:  
Sex of Drivers  
(Alberta, 1996)

SEX	Number Of Drivers*	Drivers Tested (% of total)	Drivers Grouped by BAC (mg%) (% of tested)				
			Zero	1-49	50-80	81-150	>150
MALE	166	154 (92.8)	88 (57.1)	9 (5.8)	2 (1.3)	15 (9.7)	40 (26.0)
FEMALE	40	39 (97.5)	33 (84.6)	2 (5.1)	0 (0.0)	1 (2.6)	3 (7.7)
TOTAL	206	193 (93.7)	121 (62.7)	11 (5.7)	2 (1.0)	16 (8.3)	43 (22.3)

\* Excludes operators of bicycles, snowmobiles, farm tractors, and other non-highway vehicles.



Figure 5-3  
Alcohol Use Among Male and Female  
Drivers: Alberta, 1996



**Table 5-3**

Alcohol Use Among Fatally Injured Drivers:  
Type of Vehicle Operated

VEHICLE TYPE	Number Of Drivers*	Drivers Tested (% of total)	Drivers Grouped by BAC (mg%) (% of tested)				
			Zero	1-49	50-80	81-150	>150
AUTO	103	96 (93.2)	64 (66.7)	4 (4.2)	2 (2.1)	6 (6.3)	20 (20.8)
TRUCK-VAN	87	82 (94.3)	48 (58.5)	5 (6.1)	0 (0.0)	8 (9.8)	21 (25.6)
MOTORCYCLE	12	11 (91.7)	6 (54.5)	1 (9.1)	0 (0.0)	2 (18.2)	2 (18.2)
TRACTOR- TRAILER	4	4 (100.0)	3 (75.0)	1 (25.0)	0 (0.0)	0 (0.0)	0 (0.0)
TOTAL	206	193 (93.7)	121 (62.7)	11 (5.7)	2 (1.0)	16 (8.3)	43 (22.3)

**Table 5-4**

Alcohol Use Among Fatally Injured Drivers:  
Type of Collision

COLLISION TYPE	Number Of Drivers*	Drivers Tested (% of total)	Drivers Grouped by BAC (mg%) (% of tested)				
			Zero	1-49	50-80	81-150	>150
SINGLE- VEHICLE	82	80 (97.6)	38 (47.5)	3 (3.8)	1 (1.3)	12 (15.0)	26 (32.5)
MULTIPLE- VEHICLE	124	113 (91.1)	83 (73.5)	8 (7.1)	1 (0.9)	4 (3.5)	17 (15.0)
TOTAL	206	193 (93.7)	121 (62.7)	11 (5.7)	2 (1.0)	16 (8.3)	43 (22.3)

\* Excludes operators of bicycles, snowmobiles, farm tractors, and other non-highway vehicles.

Figure 5-4a  
Alcohol Use Among Drivers of Different  
Vehicle Types: Alberta, 1996

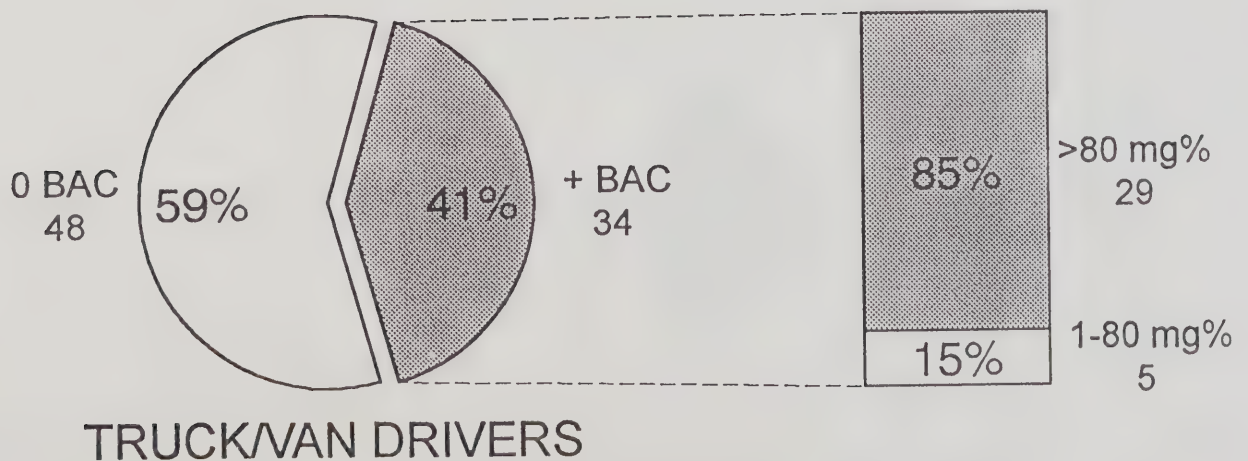
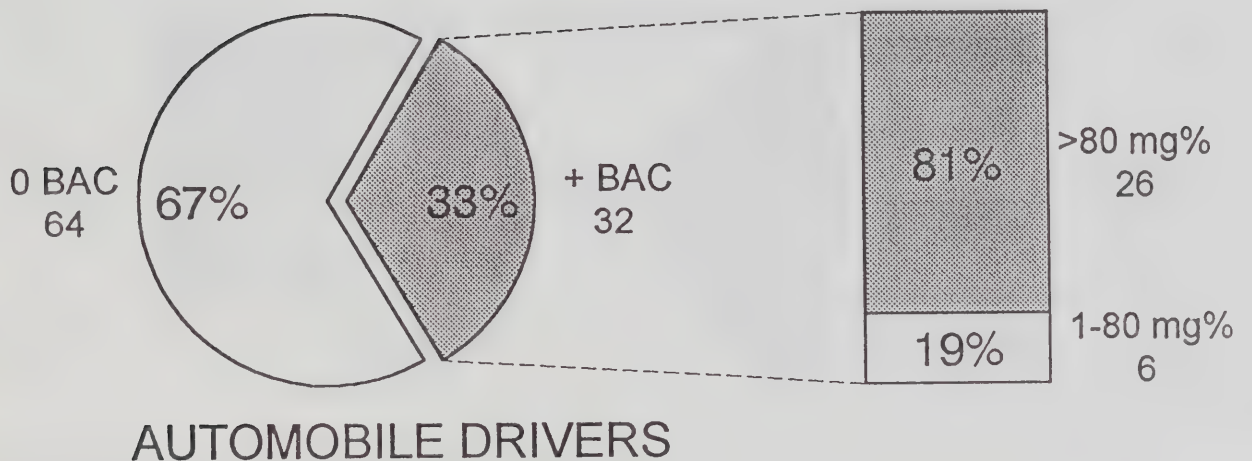


Figure 5-4b  
Alcohol Use Among Drivers of Different  
Vehicle Types: Alberta, 1996

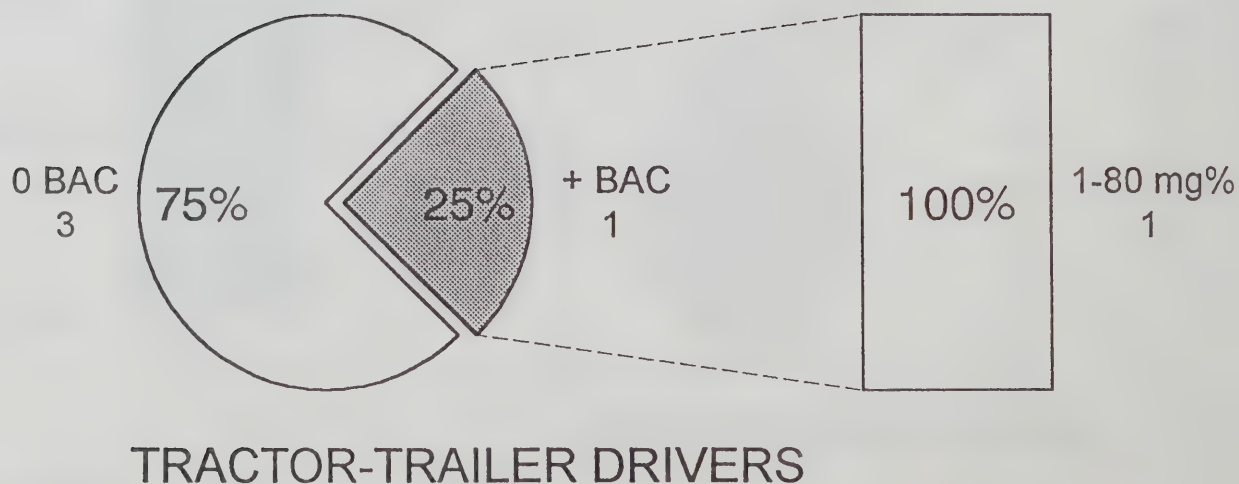
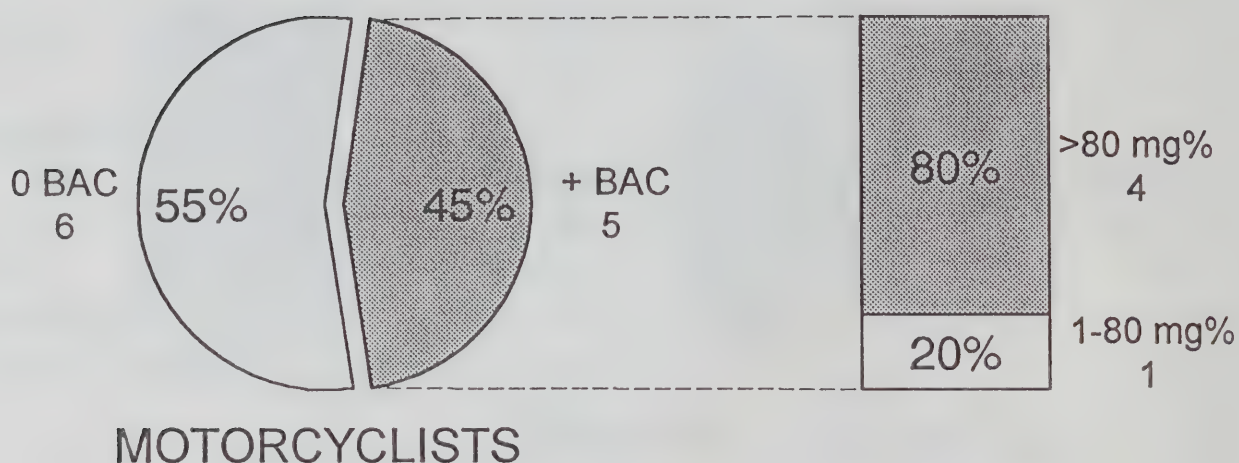




Figure 5-5  
Alcohol Use Among Drivers: Type of  
Collision: Alberta, 1996

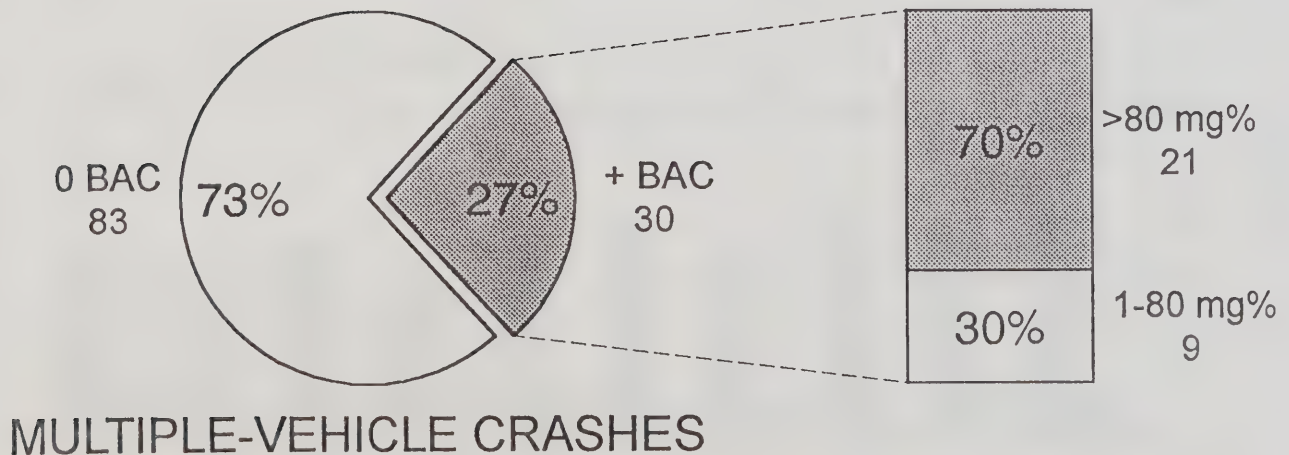
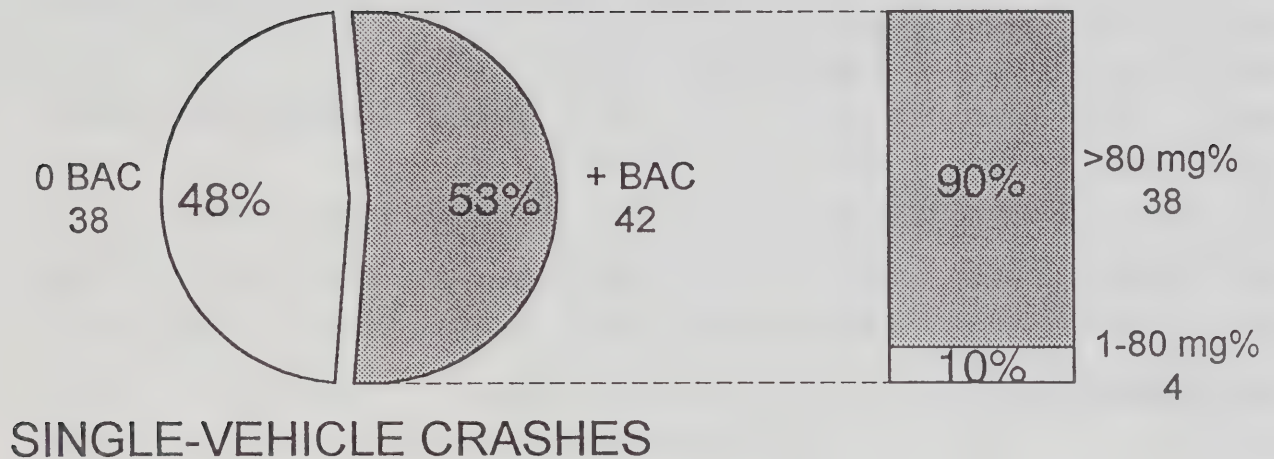


Table 5-5

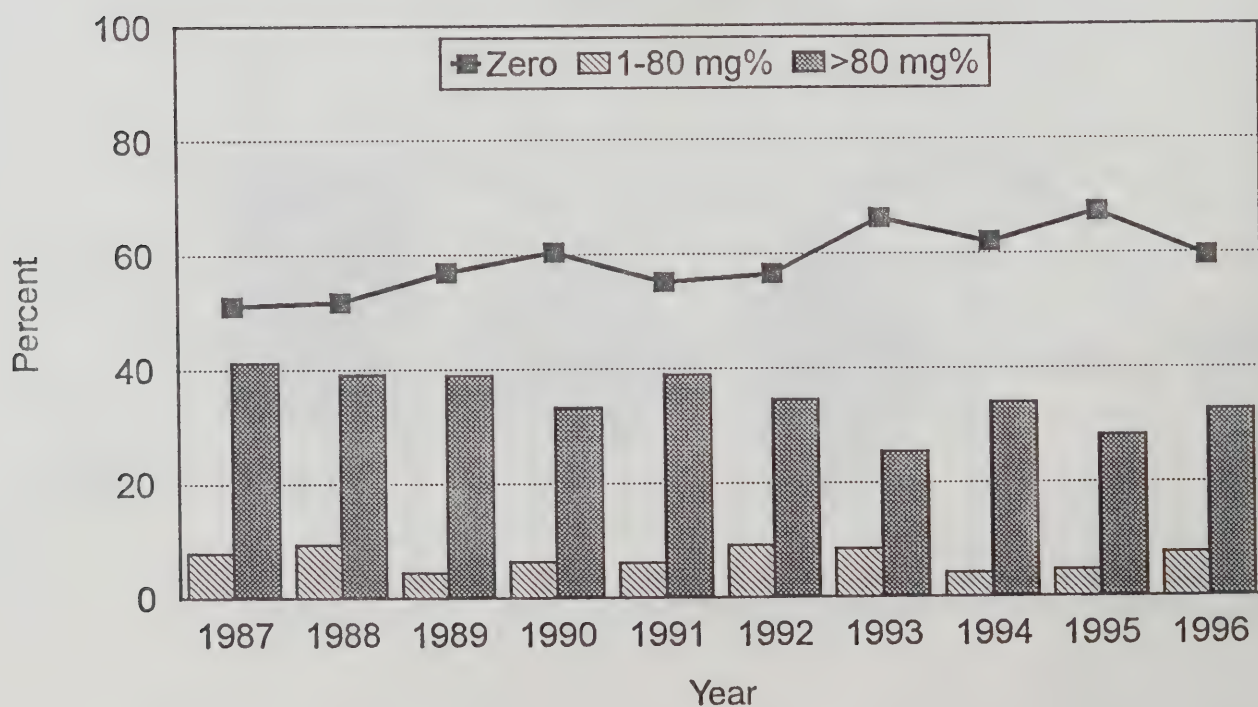
Alcohol Use Among Fatally Injured Drivers:  
Alberta, 1987-1996

YEAR	Number Of Drivers*	Drivers Tested	(% Total)	Drivers Grouped by BAC (mg%)					
				Zero	(% Tested)	1-80	(% Tested)	>80	(% Tested)
1987	265	253	95.5	129	51.0	20	7.9	104	41.1
1988	236	215	91.1	111	51.6	20	9.3	84	39.1
1989	235	229	97.4	130	56.8	10	4.4	89	38.9
1990	195	189	96.9	114	60.3	12	6.3	63	33.3
1991	192	180	93.8	99	55.0	11	6.1	70	38.9
1992	171	165	96.5	93	56.4	15	9.1	57	34.5
1993	185	177	95.7	117	66.1	15	8.5	45	25.4
1994	194	189	97.4	117	61.9	8	4.2	64	33.9
1995	201	195	97.0	131	67.2	9	4.6	55	28.2
1996	170	168	98.8	100	59.5	13	7.7	55	32.7

\* dying in less than six hours.

Figure 5-6

Trends in Alcohol Use Among Driver  
Fatalities: Alberta, 1987-1996



## **6.0 SASKATCHEWAN:**

### **Alcohol Use Among Fatally Injured Drivers**

This portion of the report contains a brief review of the major findings regarding alcohol use among drivers fatally injured in traffic collisions in Saskatchewan.

The first section provides a review of general findings for 1996, and the second section examines trends in alcohol use among driver fatalities.

#### **6.1 GENERAL FINDINGS: 1996**

Tables 6-1 to 6-4 contain the data on which the various figures in this section are based. Table 6-1 contains information on alcohol use by drivers of various age groups; Table 6-2 compares male and female drivers; Table 6-3 provides information on alcohol use by drivers of different types of vehicles; and, Table 6-4 shows alcohol levels found in drivers involved in single- and multiple-vehicle collisions.

Each table shows the number of drivers killed, the number and percent who were tested for alcohol, and the results of those tests -- this includes the number and percent of the tested drivers who showed no evidence of alcohol as well as the number and percent who were positive for alcohol in each of four BAC ranges.

**6.1.1 Rates of Testing for Alcohol.** Saskatchewan had a very high testing rate in 1996, with 94.5% of fatally injured drivers being tested for the presence of alcohol (see Table 6-1).

**6.1.2 Incidence of Alcohol.** As the totals at the bottom of Table 6-1 indicate, among tested drivers in Saskatchewan:

- o 59.4% showed no evidence of alcohol;
- o 5.8% had BACs below 50 mg%;

- o 8.7% had BACs from 81 to 150 mg%; and,
- o 26.1% had BACs over 150 mg%.

Thus, 41% of fatally injured drivers in Saskatchewan had been drinking and most of these had illegal BACs.

*o Age.* Table 6-1 and Figure 6-1 show the incidence of alcohol among drivers of various ages. For each age group, the solid portion of the bar indicates the percent of drivers in that age group who were sober. As can be seen, drivers age 16-19 were the most likely to have been drinking -- 83% of drivers in this age group had been drinking; only 17% were sober. By contrast, 83% of tested drivers age 46-55 were sober as were 71% of those age 56 and over.

Figure 6-2 shows the proportion of drinking drivers accounted for by each age group. The left bar indicates the percent of drinking drivers with BACs of 80 mg% or less accounted for by each age group. On the right are comparable data for drivers with BACs over the statutory limit. Drivers over age 55 accounted for 75% of all drinking drivers with BACs of 1-80 mg%. Drivers age 26-35 accounted for 29% of legally impaired drivers.

*o Gender.* As shown in Table 6-2 and Figure 6-3, alcohol use was related to the *gender of the driver*. Fatally injured male drivers were more likely to have been drinking than female drivers (44% and 29%, respectively). Among those who were drinking, drivers with BACs over the legal limit were more prevalent among females than males. Among fatally injured male drinking drivers, 83% had BACs over 80 mg%. All of the four female drinking drivers had BACs over the statutory limit.

*o Type of Vehicle.* Alcohol use varied as a function of the *type of vehicle* being operated, as shown in Table 6-3 and illustrated in Figures 6-4a and 6-4b. About 42% of fatally injured drivers of automobiles and 37% of drivers of trucks/vans were found to have been drinking. Alcohol was detected in two of the three (67%) motorcycle



riders. Among drinking drivers, 87% of automobile drivers, 82% of truck/van drivers, and both motorcyclists (100%) had BACs over the legal limit.

*o Type of Collision.* The incidence of alcohol also varied as a function of *type of collision* (see Table 6-4). Alcohol was found far more often in drivers involved in single-vehicle collisions than among those involved in multiple-vehicle collisions. As shown in Figure 6-5, some 75% of the drivers involved in single-vehicle crashes were positive for alcohol, compared to only 22% in multiple-vehicle collisions. Higher BACs were more characteristic of single-vehicle crashes -- 100% of the drinking drivers in single-vehicle crashes had BACs over the legal limit, compared to only 60% in multiple-vehicle crashes.

## 6.2 TRENDS IN ALCOHOL USE AMONG DRIVERS

Data on alcohol use among fatally injured drivers over the ten-year period from 1987-1996 are shown in Table 6-5. Trends are illustrated in Figure 6-6 which shows changes in the percent of fatally injured drivers who: (1) showed no evidence of alcohol (represented by the line); (2) had BACs below the legal limit (shown by the striped bars); and (3) had BACs over the legal limit (the solid bars).

As can be seen, the percent of fatally injured drivers with BACs over the legal limit generally declined from 1987 to 1994, increased in 1995, then decreased in 1996. The percent of fatally injured drivers with zero BAC increased from 1987 to 1994, declined in 1995, and then increased in 1996. The percent of fatally injured drivers with BACs between 1 and 80 mg% has decreased since 1994.

**Table 6-1**

**Alcohol Use Among Fatally Injured Drivers:  
Age of Drivers  
(Saskatchewan, 1996)**

AGE	Number Of Drivers*	Drivers Tested (% of total)	Drivers Grouped by BAC (mg%) (% of tested)				
			Zero	1-49	50-80	81-150	>150
16-17	3	2 (66.7)	0 (0.0)	0 (0.0)	0 (0.0)	1 (50.0)	1 (50.0)
18-19	4	4 (100.0)	1 (25.0)	0 (0.0)	0 (0.0)	2 (50.0)	1 (25.0)
20-25	9	9 (100.0)	6 (66.7)	1 (11.1)	0 (0.0)	1 (11.1)	1 (11.1)
26-35	12	12 (100.0)	5 (41.7)	0 (0.0)	0 (0.0)	0 (0.0)	7 (58.3)
36-45	12	12 (100.0)	7 (58.3)	0 (0.0)	0 (0.0)	0 (0.0)	5 (41.7)
46-55	6	6 (100.0)	5 (83.3)	0 (0.0)	0 (0.0)	0 (0.0)	1 (16.7)
>55	27	24 (88.9)	17 (70.8)	3 (12.5)	0 (0.0)	2 (8.3)	2 (8.3)
<b>TOTAL</b>	<b>73</b>	<b>69 (94.5)</b>	<b>41 (59.4)</b>	<b>4 (5.8)</b>	<b>0 (0.0)</b>	<b>6 (8.7)</b>	<b>18 (26.1)</b>

\* Excludes operators of bicycles, snowmobiles, farm tractors, and other non-highway vehicles.

Figure 6-1  
Alcohol Use and Age of Driver  
Saskatchewan, 1996

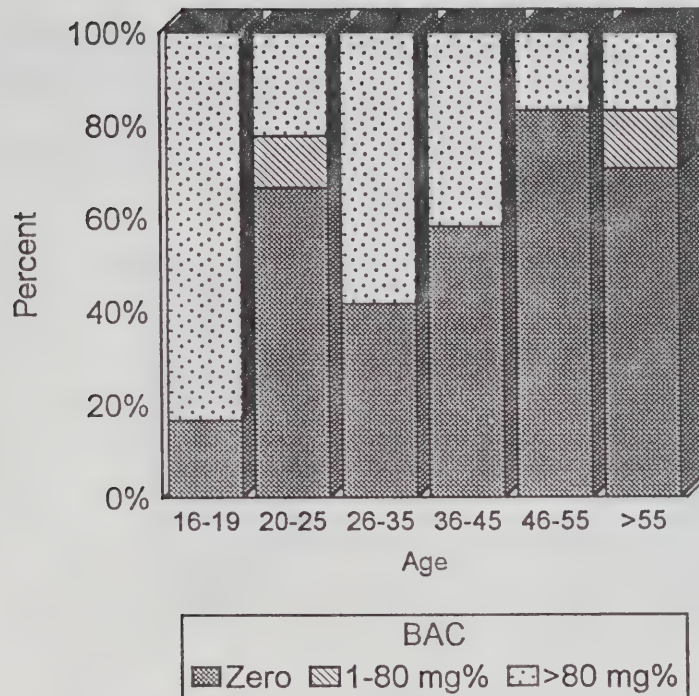
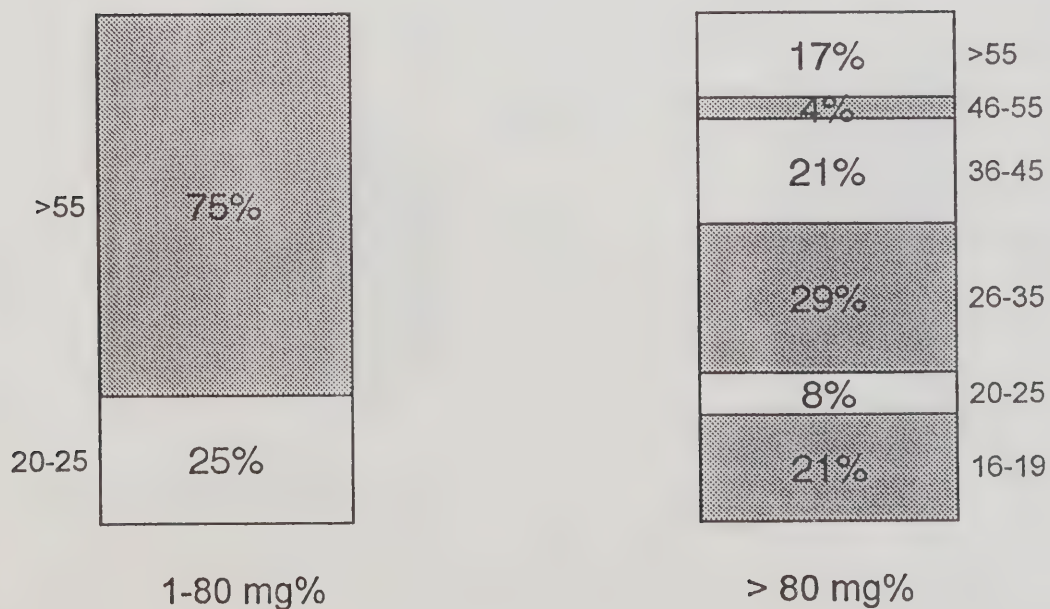


Figure 6-2  
Proportion of Drinking Drivers by Age  
Saskatchewan, 1996



**Table 6-2**

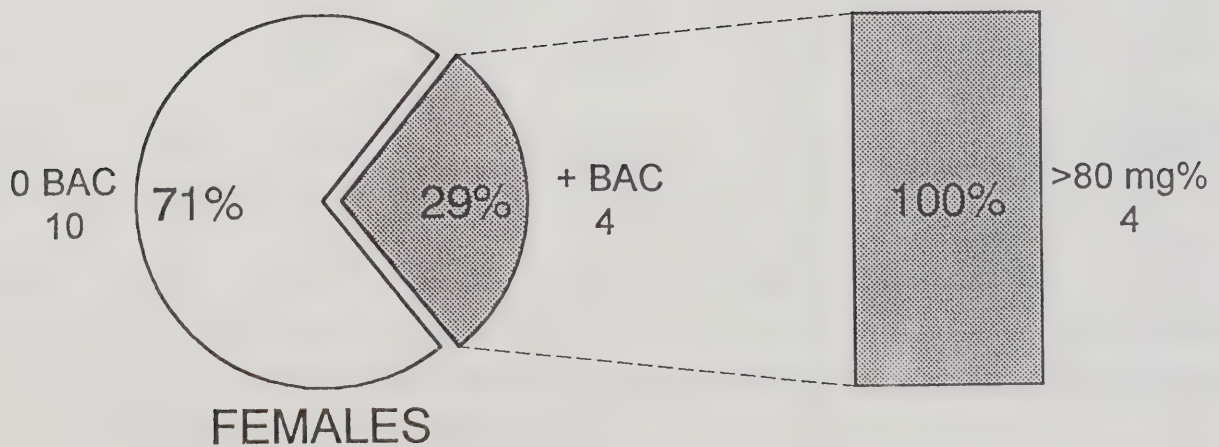
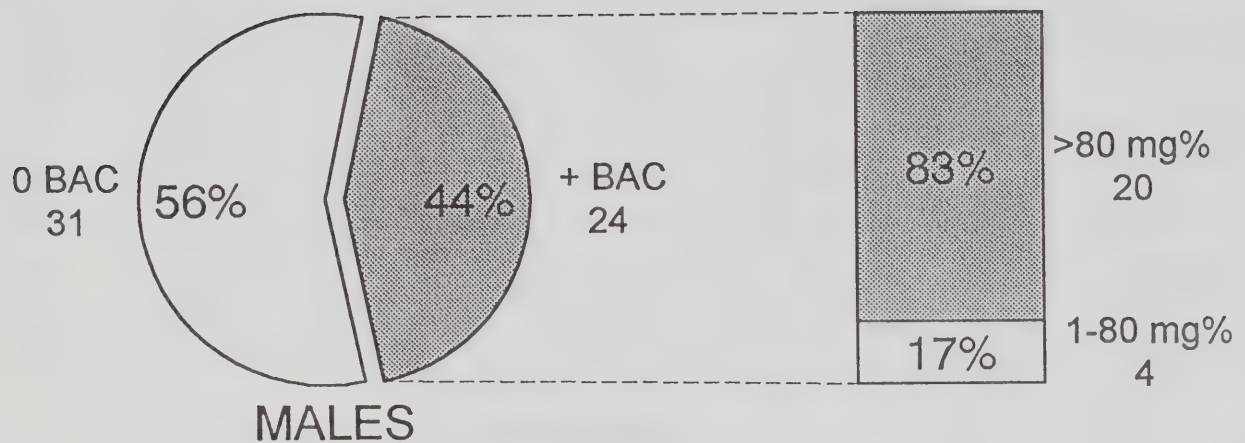
Alcohol Use Among Fatally Injured Drivers:  
Sex of Drivers  
(Saskatchewan, 1996)

SEX	Number Of Drivers*	Drivers Tested (% of total)	Drivers Grouped by BAC (mg%) (% of tested)				
			Zero	1-49	50-80	81-150	>150
MALE	57	55 (96.5)	31 (56.4)	4 (7.3)	0 (0.0)	5 (9.1)	15 (27.3)
FEMALE	16	14 (87.5)	10 (71.4)	0 (0.0)	0 (0.0)	1 (7.1)	3 (21.4)
TOTAL	73	69 (94.5)	41 (59.4)	4 (5.8)	0 (0.0)	6 (8.7)	18 (26.1)

\* Excludes operators of bicycles, snowmobiles, farm tractors, and other non-highway vehicles.



Figure 6-3  
Alcohol Use Among Male and Female  
Drivers: Saskatchewan, 1996



**Table 6-3**

**Alcohol Use Among Fatally Injured Drivers:  
Type of Vehicle Operated**

VEHICLE TYPE	Number Of Drivers*	Drivers Tested (% of total)	Drivers Grouped by BAC (mg%) (% of tested)				
			Zero	1-49	50-80	81-150	>150
AUTO	39	36 (92.3)	21 (58.3)	2 (5.6)	0 (0.0)	4 (11.1)	9 (25.0)
TRUCK-VAN	31	30 (96.8)	19 (63.3)	2 (6.7)	0 (0.0)	1 (3.3)	8 (26.7)
MOTORCYCLE	3	3 (100.0)	1 (33.3)	0 (0.0)	0 (0.0)	1 (33.3)	1 (33.3)
TOTAL	73	69 (94.5)	41 (59.4)	4 (5.8)	0 (0.0)	6 (8.7)	18 (26.1)

**Table 6-4**

**Alcohol Use Among Fatally Injured Drivers:  
Type of Collision**

COLLISION TYPE	Number Of Drivers*	Drivers Tested (% of total)	Drivers Grouped by BAC (mg%) (% of tested)				
			Zero	1-49	50-80	81-150	>150
SINGLE- VEHICLE	25	24 (96.0)	6 (25.0)	0 (0.0)	0 (0.0)	4 (16.7)	14 (58.3)
MULTIPLE- VEHICLE	48	45 (93.8)	35 (77.8)	4 (8.9)	0 (0.0)	2 (4.4)	4 (8.9)
TOTAL	73	69 (94.5)	41 (59.4)	4 (5.8)	0 (0.0)	6 (8.7)	18 (26.1)

\* Excludes operators of bicycles, snowmobiles, farm tractors, and other non-highway vehicles.

Figure 6-4a  
Alcohol Use Among Drivers of Different  
Vehicle Types: Saskatchewan, 1996

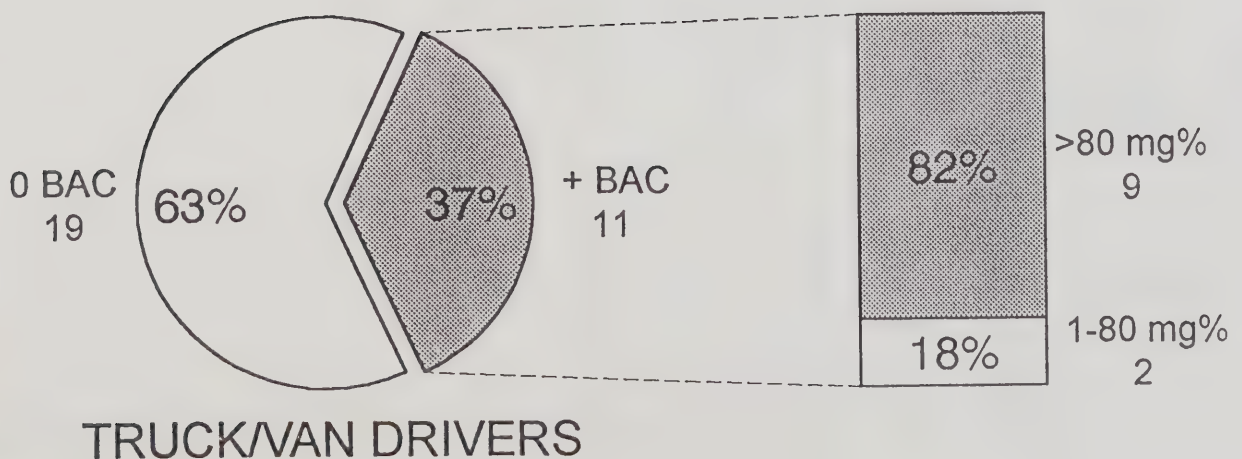
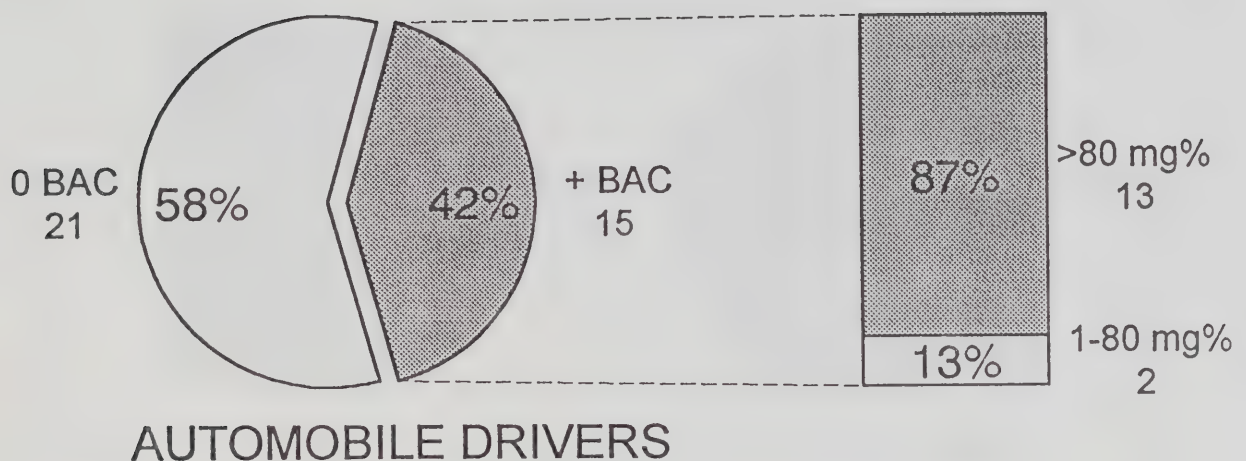


Figure 6-4b  
Alcohol Use Among Drivers of Different  
Vehicle Types: Saskatchewan, 1996

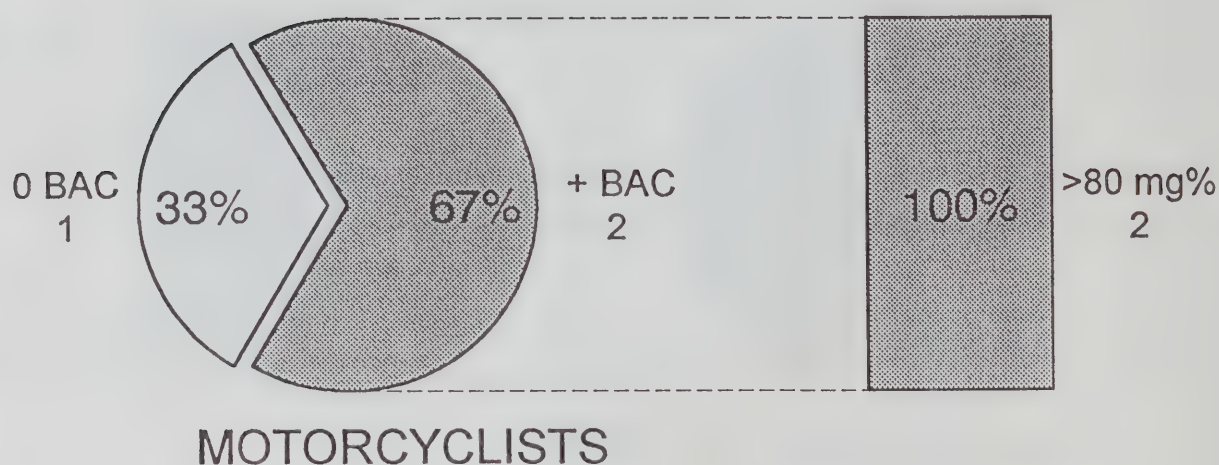




Figure 6-5  
Alcohol Use Among Drivers: Type of  
Collision: Saskatchewan, 1996

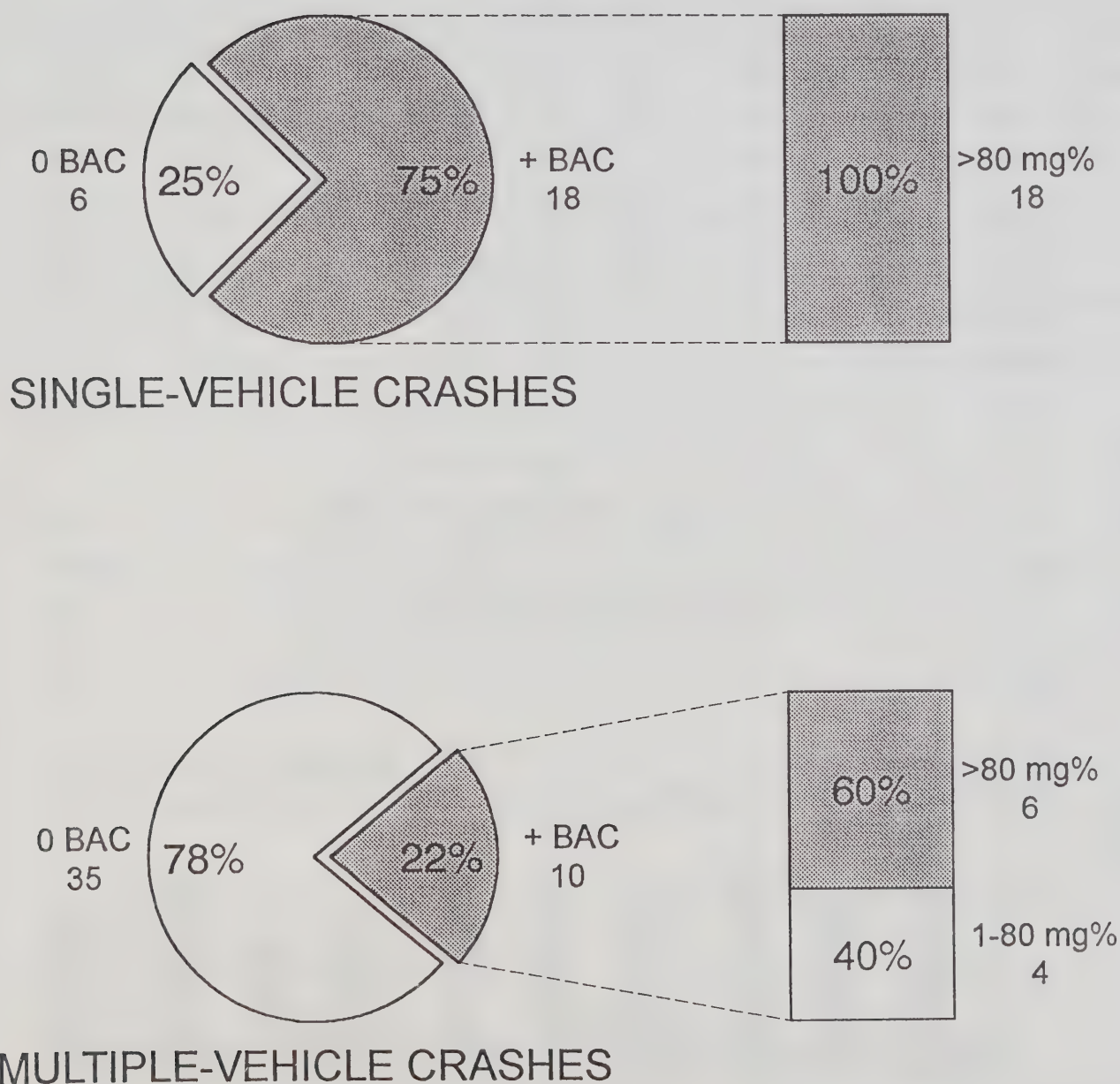


Table 6-5

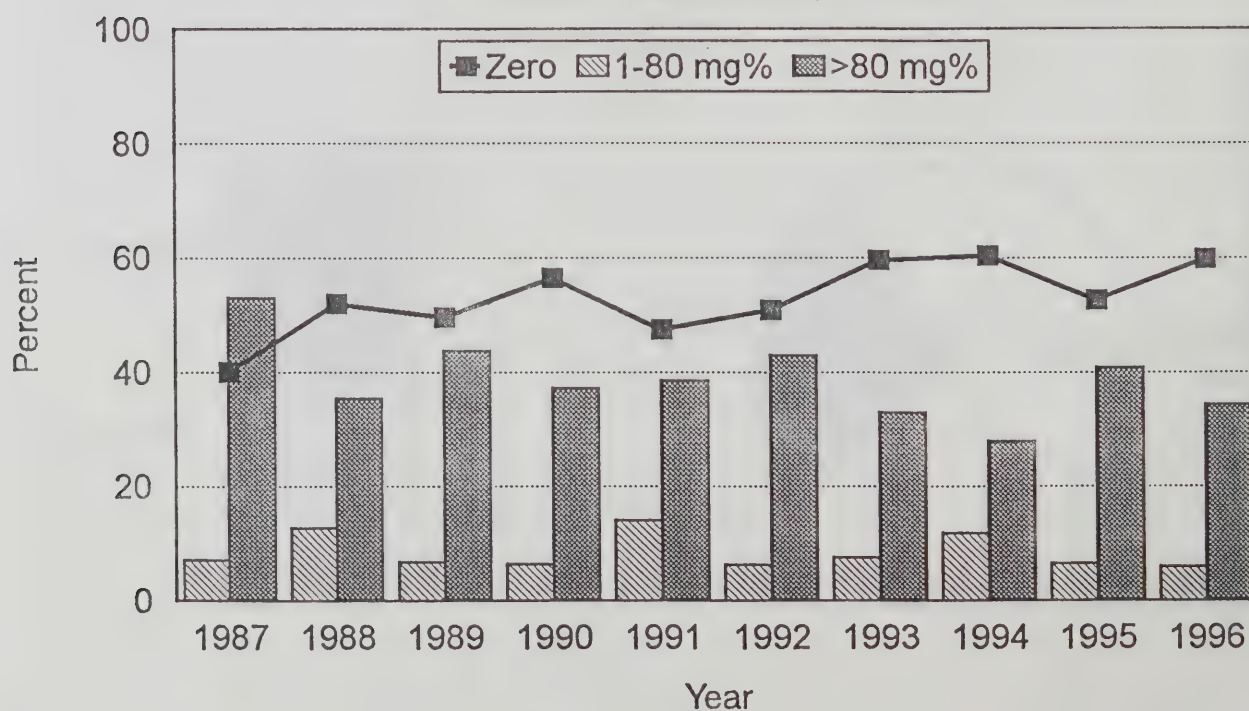
Alcohol Use Among Fatally Injured Drivers:  
Saskatchewan, 1987-1996

YEAR	Number Of Drivers*	Drivers Tested	(% Total)	Drivers Grouped by BAC (mg%)					
				Zero	(% Tested)	1-80	(% Tested)	>80	(% Tested)
1987	94	85	90.4	34	40.0	6	7.1	45	52.9
1988	81	79	97.5	41	51.9	10	12.7	28	35.4
1989	110	103	93.6	51	49.5	7	6.8	45	43.7
1990	80	78	97.5	44	56.4	5	6.4	29	37.2
1991	83	78	94.0	37	47.4	11	14.1	30	38.5
1992	66	63	95.5	32	50.8	4	6.3	27	42.9
1993	80	79	98.8	47	59.5	6	7.6	26	32.9
1994	68	68	100.0	41	60.3	8	11.8	19	27.9
1995	77	76	98.7	40	52.6	5	6.6	31	40.8
1996	68	67	98.5	40	59.7	4	6.0	23	34.3

\* dying in less than six hours.

Figure 6-6

Trends in Alcohol Use Among Driver  
Fatalities: Saskatchewan, 1987-1996



## **7.0 MANITOBA:**

### **Alcohol Use Among Fatally Injured Drivers**

This portion of the report contains a brief review of the major findings regarding alcohol use among drivers fatally injured in traffic collisions in Manitoba.

The first section provides a review of general findings for 1996, and the second section examines trends in alcohol use among driver fatalities.

#### **7.1 GENERAL FINDINGS: 1996**

Tables 7-1 to 7-4 contain the data on which the various figures in this section are based. Table 7-1 contains information on alcohol use by drivers of various age groups; Table 7-2 compares male and female drivers; Table 7-3 provides information on alcohol use by drivers of different types of vehicles; and, Table 7-4 shows alcohol levels found in drivers involved in single- and multiple-vehicle collisions.

Each table shows the number of drivers killed, the number and percent who were tested for alcohol, and the results of those tests -- this includes the number and percent of the tested drivers who showed no evidence of alcohol as well as the number and percent who were positive for alcohol in each of four BAC ranges.

**7.1.1 Rates of Testing for Alcohol.** Manitoba had a very high testing rate in 1996, with 91.7% of fatally injured drivers tested for the presence of alcohol (see Table 7-1).

**7.1.2 Incidence of Alcohol.** As the totals at the bottom of Table 7-1 indicate, among tested drivers in Manitoba:

- o 43.2% showed no evidence of alcohol;
- o 4.5% had BACs from 1 to 49 mg%;
- o 2.3% had BACs from 50 to 80 mg%;

- o 13.6% had BACs from 81 to 150 mg%; and,
- o 36.4% had BACs over 150 mg%.

Thus, 57% of fatally injured drivers in Manitoba had been drinking and most of these had illegal BACs.

o *Age.* Table 7-1 and Figure 7-1 show the incidence of alcohol among drivers of various ages. For each age group, the solid portion of the bar indicates the percent of drivers in that age group who were sober. As can be seen, drivers age 20-25 were the least likely to be sober -- the most likely to have been drinking; only 20% were sober and 80% of drivers in this age group had been drinking. By contrast, 83% of the fatally injured drivers over age 55 showed no evidence of alcohol.

Figure 7-2 shows the proportion of drinking drivers accounted for by each age group. The left bar indicates the percent of drinking drivers with BACs of 80 mg% or less accounted for by each age group. On the right are comparable data for drivers with BACs over the statutory limit. As can be seen, drivers age 16-19, 20-25 and 46-55 each accounted for 33% of those with BACs below 80 mg%. Drivers age 20-25 and 26-35 both accounted for 32% of drivers with BACs over 80 mg%.

o *Gender.* As shown in Table 7-2, and Figure 7-3, alcohol use was related to the *gender of the driver*. Fatally injured male drivers were more likely to have been drinking than female drivers (60% and 44%, respectively). Among fatally injured drinking drivers, 86% of males had BACs over 80 mg% and all four females (100%) had BACs over the statutory limit.

o *Type of Vehicle.* Data on alcohol use as a function of the *type of vehicle* being operated, is shown in Table 7-3 and illustrated in Figure 7-4. Drivers of trucks/vans, tractor-trailers and motorcycles have been aggregated into an "other" vehicle type category. This has been done to prevent identifying an individual driver's BAC based on the type of vehicle that they were operating. As can be seen, about 53% of automobile drivers and 60% of drivers of other vehicles were found to have been



drinking. High BACs were characteristic of drivers of both vehicle types. About 93% of drinking drivers of other vehicles had BACs over 80 mg% compared to 80% of the drinking automobile drivers.

*o Type of Collision.* The incidence of alcohol also varied as a function of *type of collision* (see Table 7-4). Alcohol was found far more often in drivers involved in single-vehicle collisions than in those involved in multiple-vehicle collisions. As shown in Figure 7-5, some 77% of the drivers involved in single-vehicle crashes were positive for alcohol, compared to only 36% in multiple-vehicle collisions. Of the drinking drivers in single-vehicle crashes, 94% had BACs over the legal limit, compared to 75% of the drinking drivers in multiple-vehicle crashes.

## 7.2 TRENDS IN ALCOHOL USE AMONG DRIVERS

Data on alcohol use among fatally injured drivers over the ten-year period from 1987-1996 are shown in Table 7-5. Trends are illustrated in Figure 7-6 which shows changes in the percent of fatally injured drivers who: (1) showed no evidence of alcohol (represented by the line); (2) had BACs below the legal limit (given by the striped bar); and (3) had BACs over the legal limit (the solid bars).

As can be seen, the percent of fatally injured drivers with BACs over the legal limit declined to its lowest level in 1995 before increasing in 1996. Fatally injured drivers who were sober peaked in 1995, then declined in 1996. And, since 1994, there has been a decrease in the proportion of drivers with a BAC between 1-80 mg%.

**Table 7-1**

Alcohol Use Among Fatally Injured Drivers:  
Age of Drivers  
(Manitoba, 1996)

AGE	Number Of Drivers*	Drivers Tested (% of total)	Drivers Grouped by BAC (mg%) (% of tested)				
			Zero	1-49	50-80	81-150	>150
<16	1	1 (100.0)	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
16-19	6	6 (100.0)	2 (33.3)	0 (0.0)	1 (16.7)	2 (33.3)	1 (16.7)
20-25	10	10 (100.0)	2 (20.0)	1 (10.0)	0 (0.0)	2 (20.0)	5 (50.0)
26-35	13	12 (92.3)	5 (41.7)	0 (0.0)	0 (0.0)	1 (8.3)	6 (50.0)
36-45	8	7 (87.5)	3 (42.9)	0 (0.0)	0 (0.0)	1 (14.3)	3 (42.9)
46-55	2	2 (100.0)	1 (50.0)	1 (50.0)	0 (0.0)	0 (0.0)	0 (0.0)
>55	8	6 (75.0)	5 (83.3)	0 (0.0)	0 (0.0)	0 (0.0)	1 (16.7)
<b>TOTAL</b>	<b>48</b>	<b>44 (91.7)</b>	<b>19 (43.2)</b>	<b>2 (4.5)</b>	<b>1 (2.3)</b>	<b>6 (13.6)</b>	<b>16 (36.4)</b>

\* Excludes operators of bicycles, snowmobiles, farm tractors, and other non-highway vehicles.

Figure 7-1  
Alcohol Use and Age of Driver  
Manitoba, 1996

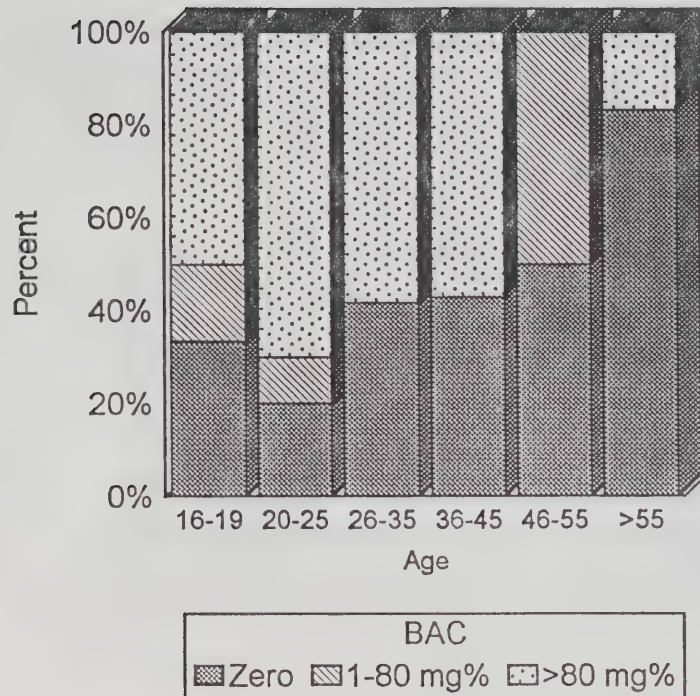
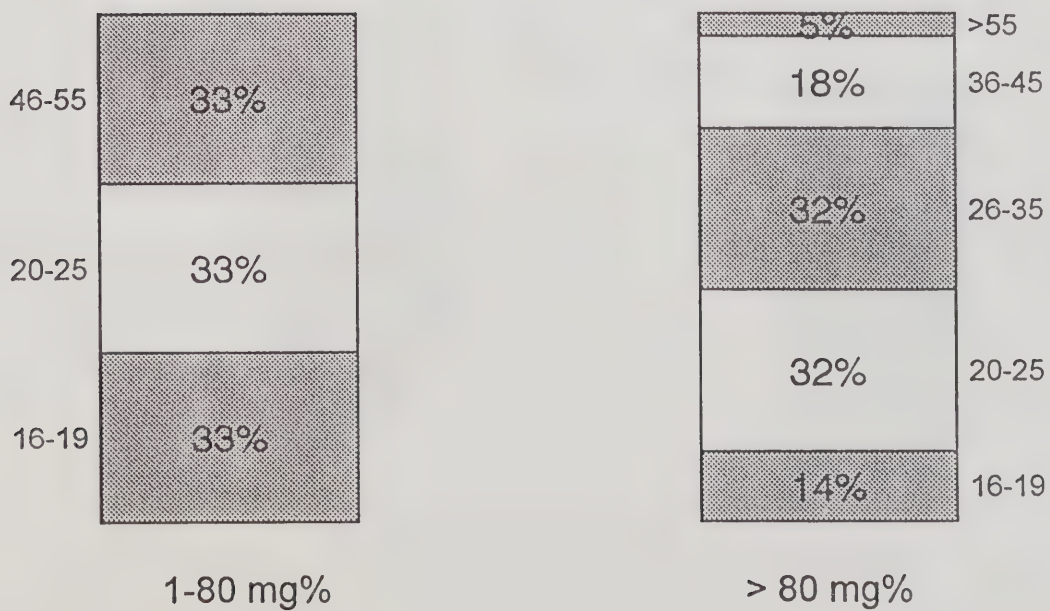


Figure 7-2  
Proportion of Drinking Drivers by Age  
Manitoba, 1996



**Table 7-2**

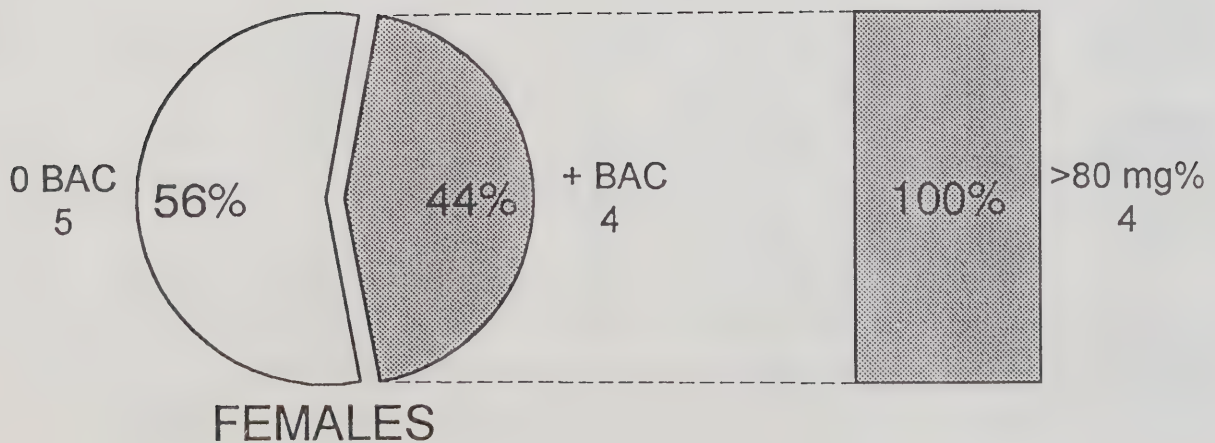
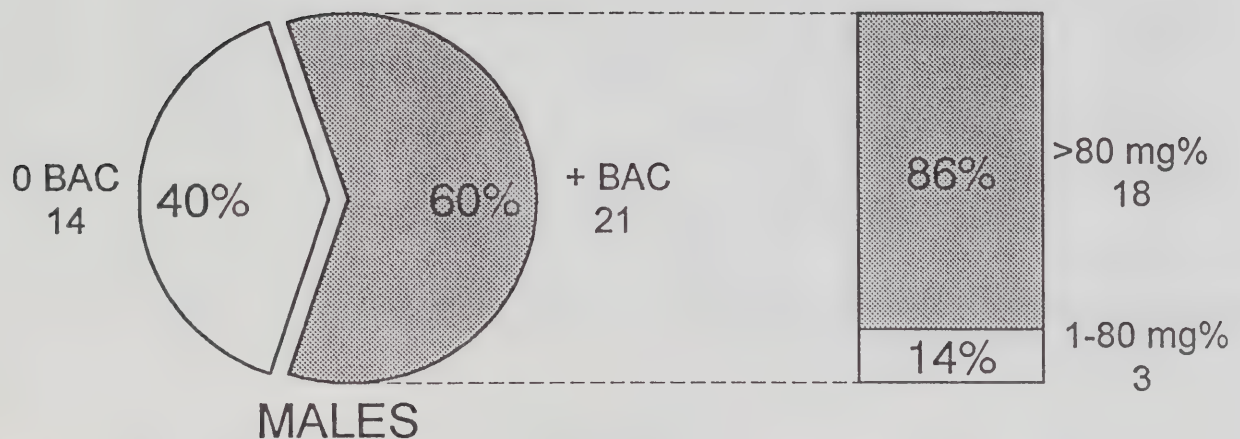
Alcohol Use Among Fatally Injured Drivers:  
Sex of Drivers  
(Manitoba, 1996)

SEX	Number Of Drivers*	Drivers Tested (% of total)	Drivers Grouped by BAC (mg%) (% of tested)				
			Zero	1-49	50-80	81-150	>150
MALE	39	35 (89.7)	14 (40.0)	2 (5.7)	1 (2.9)	5 (14.3)	13 (37.1)
FEMALE	9	9 (100.0)	5 (55.6)	0 (0.0)	0 (0.0)	1 (11.1)	3 (33.3)
TOTAL	48	44 (91.7)	19 (43.2)	2 (4.5)	1 (2.3)	6 (13.6)	16 (36.4)

\* Excludes operators of bicycles, snowmobiles, farm tractors, and other non-highway vehicles.



Figure 7-3  
Alcohol Use Among Male and Female  
Drivers: Manitoba, 1996



**Table 7-3**

Alcohol Use Among Fatally Injured Drivers:  
Type of Vehicle Operated

VEHICLE TYPE	Number Of Drivers*	Drivers Tested (% of total)	Drivers Grouped by BAC (mg%) (% of tested)				
			Zero	1-49	50-80	81-150	>150
AUTO	22	19 (86.4)	9 (47.4)	1 (5.3)	1 (5.3)	3 (15.8)	5 (26.3)
OTHER#	26	25 (96.2)	10 (40.0)	1 (4.0)	0 (0.0)	3 (12.0)	11 (44.0)
TOTAL	48	44 (91.7)	19 (43.2)	2 (4.5)	1 (2.3)	6 (13.6)	16 (36.4)

# This category includes trucks/vans, motorcycles and tractor-trailers. It has been aggregated to ensure that the BAC of one of the drivers cannot be identified.

**Table 7-4**

Alcohol Use Among Fatally Injured Drivers:  
Type of Collision

COLLISION TYPE	Number Of Drivers*	Drivers Tested (% of total)	Drivers Grouped by BAC (mg%) (% of tested)				
			Zero	1-49	50-80	81-150	>150
SINGLE- VEHICLE	23	22 (95.7)	5 (22.7)	1 (4.5)	0 (0.0)	4 (18.2)	12 (54.5)
MULTIPLE- VEHICLE	25	22 (88.0)	14 (63.6)	1 (4.5)	1 (4.5)	2 (9.1)	4 (18.2)
TOTAL	48	44 (91.7)	19 (43.2)	2 (4.5)	1 (2.3)	6 (13.6)	16 (36.4)

\* Excludes operators of bicycles, snowmobiles, farm tractors, and other non-highway vehicles.

**Figure 7-4**  
**Alcohol Use Among Drivers of Different**  
**Vehicle Types: Manitoba, 1996**

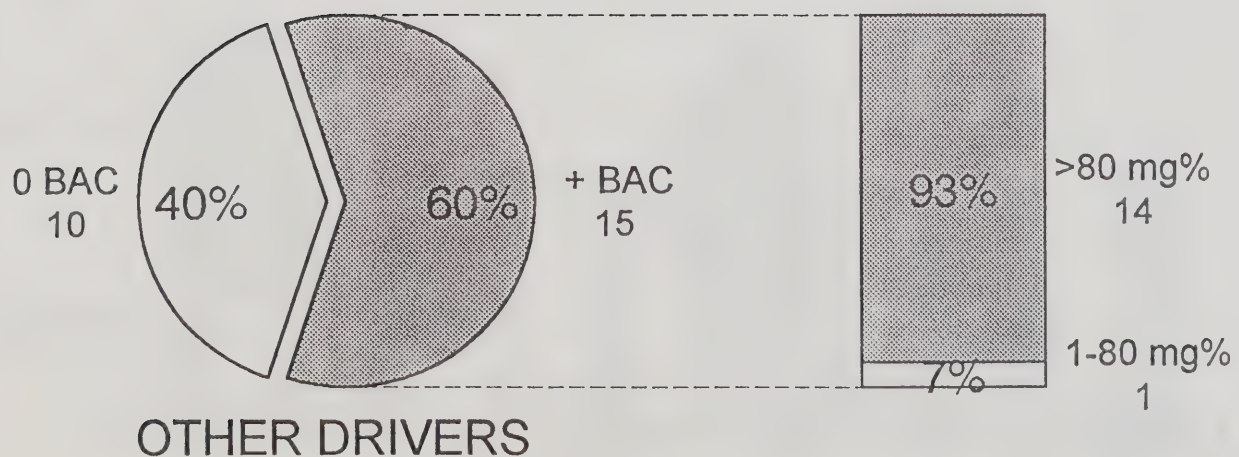
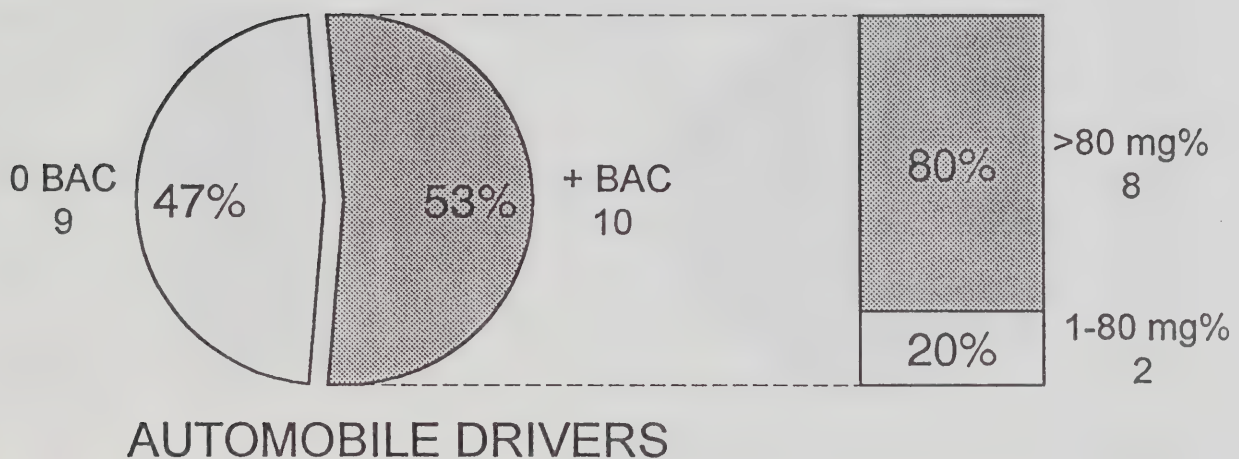




Figure 7-5  
Alcohol Use Among Drivers: Type of  
Collision: Manitoba, 1996

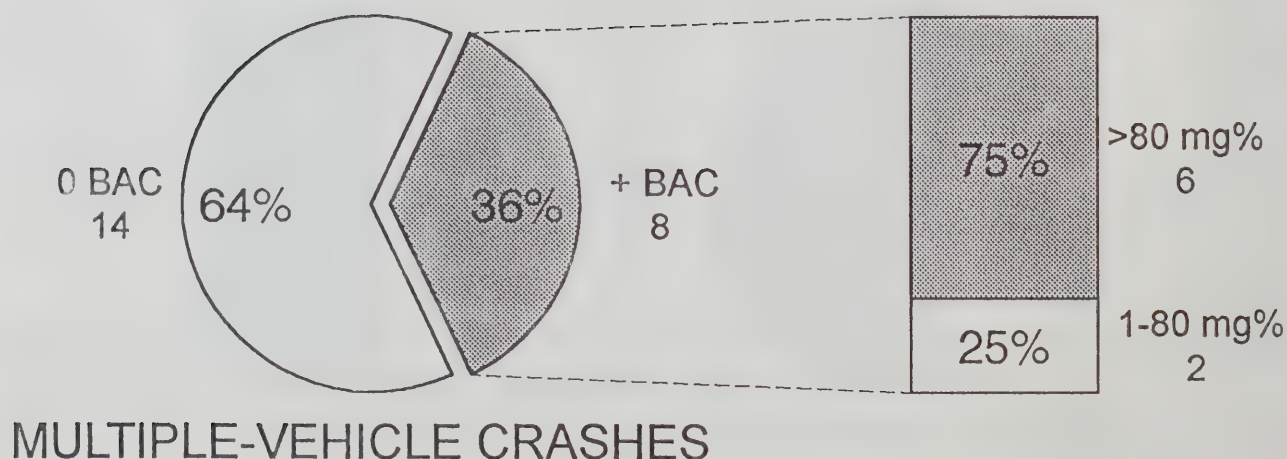
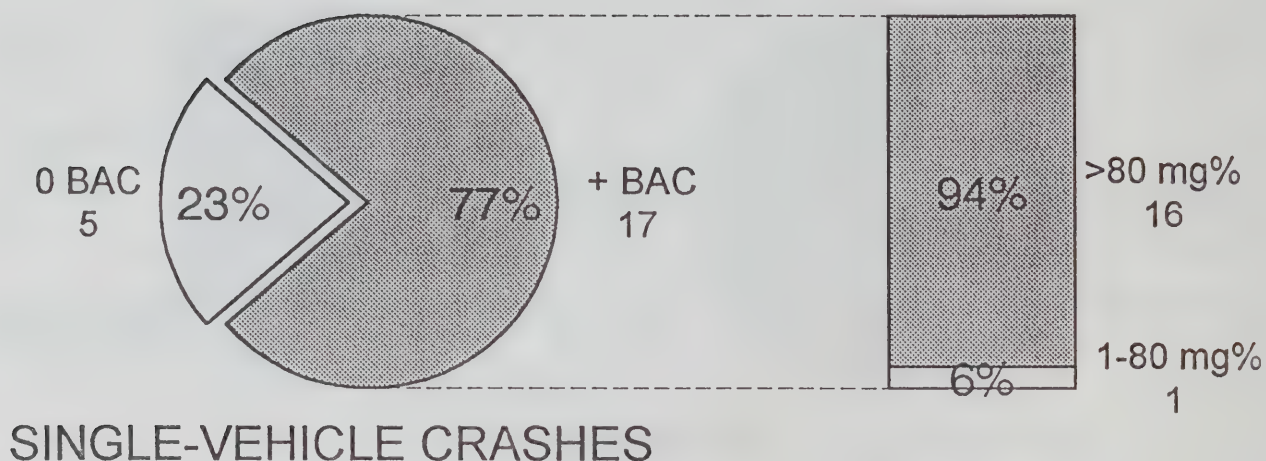




Table 7-5

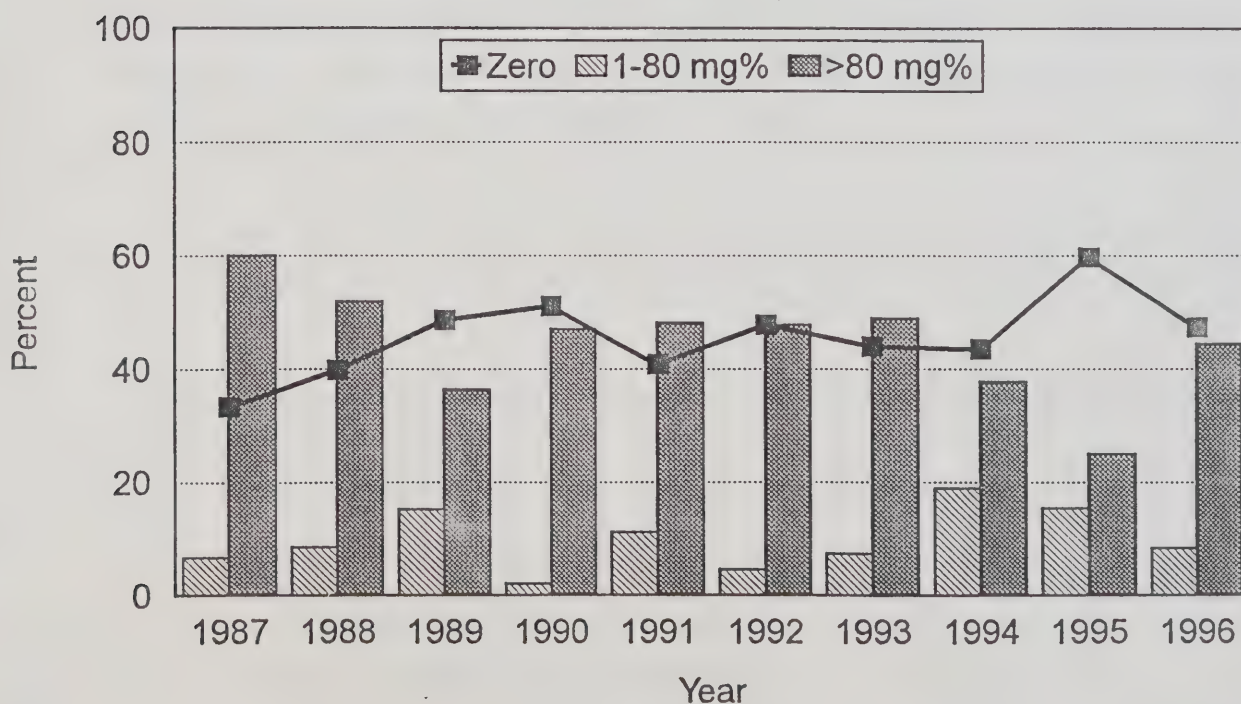
Alcohol Use Among Fatally Injured Drivers:  
Manitoba, 1987-1996

YEAR	Number Of Drivers*	Drivers Tested	(% Total)	Drivers Grouped by BAC (mg%)					
				Zero	(% Tested)	1-80	(% Tested)	>80	(% Tested)
1987	67	60	89.6	20	33.3	4	6.7	36	60.0
1988	64	58	90.6	23	39.7	5	8.6	30	51.7
1989	70	66	94.3	32	48.5	10	15.2	24	36.4
1990	54	49	90.7	25	51.0	1	2.0	23	46.9
1991	63	54	85.7	22	40.7	6	11.1	26	48.1
1992	50	44	88.0	21	47.7	2	4.5	21	47.7
1993	59	41	69.5	18	43.9	3	7.3	20	48.8
1994	57	53	93.0	23	43.4	10	18.9	20	37.7
1995	62	52	83.9	31	59.6	8	15.4	13	25.0
1996	37	36	97.3	17	47.2	3	8.3	16	44.4

\* dying in less than six hours.

Figure 7-6

Trends in Alcohol Use Among Driver  
Fatalities: Manitoba, 1987-1996





## **8.0 ONTARIO:**

### **Alcohol Use Among Fatally Injured Drivers**

This portion of the report contains a brief review of the major findings regarding alcohol use among drivers fatally injured in traffic collisions in Ontario.

The first section provides a review of general findings for 1996, and the second section examines trends in alcohol use among driver fatalities.

#### **8.1 GENERAL FINDINGS: 1996**

Tables 8-1 to 8-4 contain the raw data on which the various figures in this section are based. Table 8-1 contains information on alcohol use by drivers of various age groups; Table 8-2 compares male and female drivers; Table 8-3 provides information on alcohol use by drivers of different types of vehicles; and, Table 8-4 shows alcohol levels found in drivers involved in single- and multiple-vehicle collisions.

Each table shows the number of drivers killed, the number and percent who were tested for alcohol, and the results of those tests -- this includes the number and percent of the tested drivers who showed no evidence of alcohol as well as the number and percent who were positive for alcohol in each of four BAC ranges.

**8.1.1 Rates of Testing for Alcohol.** Ontario had a high testing rate in 1996 with 82.2% of fatally injured drivers being tested for the presence of alcohol (see Table 8-1).

**8.1.2 Incidence of Alcohol.** As the totals at the bottom of Table 8-1 indicate, among tested drivers in Ontario:

- o 63.0% showed no evidence of alcohol;
- o 6.3% had BACs below 50 mg%;
- o 1.4% had BACs from 50 to 80 mg%;

- o 8.1% had BACs from 81 to 150 mg%; and,
- o 21.2% had BACs over 150 mg%.

Thus, 37% of fatally injured drivers in Ontario had been drinking and most of these had illegal BACs.

o *Age.* Table 8-1 and Figure 8-1 show the incidence of alcohol among drivers of various ages. For each age group, the solid portion of the bar indicates the percent of drivers in that age group who were sober. As can be seen, drivers age 36-45 were the least likely to be sober and the most likely to have been drinking; only 49% of drivers in these age groups were sober -- 51% had been drinking. By contrast, the vast majority of drivers over 55 showed no evidence of alcohol (84%).

Figure 8-2 shows the proportion of drinking-drivers accounted for by each age group. The left bar indicates the percent of drinking drivers with BACs of 80 mg% or less accounted for by each age group. On the right are comparable data for drivers with BACs over the statutory limit. As can be seen, drivers age 26-35 account for 24% of all fatally injured drinking drivers with BACs below 80 mg%. Of those with BACs over the legal limit, 32% were in the 26-35 age range.

o *Gender.* As shown in Table 8-2 and Figure 8-3, alcohol use was related to the *gender of the driver*. Fatally injured male drivers were far more likely to have been drinking than female drivers (40% and 25%, respectively). Among those who were drinking, drivers with BACs over the legal limit were far more prevalent in both groups. Among fatally injured drinking drivers, 79% of males and 80% of females had BACs over 80 mg%.

o *Type of Vehicle.* Alcohol use varied as a function of the *type of vehicle* being operated, as shown in Table 8-3 and illustrated in Figures 8-4a and 8-4b. Among fatally injured drivers, 37% of automobile drivers, 38% of truck/van drivers, and 44%



of motorcyclists were drinking. None of the five tractor-trailer drivers had been drinking. About 86% of the fatally injured drinking truck/van drivers, 78% of automobile drivers and 67% of motorcyclists had BACs over the legal limit.

*o Type of Collision.* The incidence of alcohol also varied as a function of *type of collision* (see Table 8-4). Alcohol was found far more often in drivers involved in single-vehicle collisions than among those involved in multiple-vehicle collisions. As shown in Figure 8-5, some 60% of the drivers involved in single-vehicle crashes were positive for alcohol, compared to only 21% in multiple-vehicle collisions. Among drinking drivers, 88% of the drivers in single-vehicle crashes had BACs over the legal limit, compared to only 64% in multiple-vehicle crashes.

## 8.2 TRENDS IN ALCOHOL USE AMONG DRIVERS

Data on alcohol use among fatally injured drivers over the ten-year period from 1987-1996 are shown in Table 8-5. Trends are illustrated in Figure 8-6, which shows changes in the percent of fatally injured drivers who: (1) showed no evidence of alcohol (represented by the line); (2) had BACs below the legal limit (given by the striped bar); and (3) had BACs over the legal limit (the solid bars).

As can be seen, the percent of fatally injured drivers with BACs over the legal limit has declined since 1992, reaching its lowest level in 1996. The percent of fatally injured drivers who were sober has gradually increased since 1992, reaching a high of 63% in 1996. The percent of fatally injured drivers with BACs between 1-80 mg% has remained relatively constant during the past decade.

Table 8-1

Alcohol Use Among Fatally Injured Drivers:  
Age of Drivers  
(Ontario, 1996)

AGE	Number Of Drivers*	Drivers Tested (% of total)	Drivers Grouped by BAC (mg%) (% of tested)				
			Zero	1-49	50-80	81-150	>150
16-17	8	7 (87.5)	5 (71.4)	0 (0.0)	0 (0.0)	2 (28.6)	0 (0.0)
18-19	22	21 (95.5)	13 (61.9)	0 (0.0)	2 (9.5)	5 (23.8)	1 (4.8)
20-25	80	67 (83.8)	39 (58.2)	5 (7.5)	1 (1.5)	8 (11.9)	14 (20.9)
26-35	123	107 (87.0)	59 (55.1)	6 (5.6)	2 (1.9)	6 (5.6)	34 (31.8)
36-45	78	71 (91.0)	35 (49.3)	5 (7.0)	0 (0.0)	7 (9.9)	24 (33.8)
46-55	67	57 (85.1)	36 (63.2)	5 (8.8)	1 (1.8)	2 (3.5)	13 (22.8)
>55	145	100 (69.0)	84 (84.0)	6 (6.0)	0 (0.0)	5 (5.0)	5 (5.0)
TOTAL	523	430 (82.2)	271 (63.0)	27 (6.3)	6 (1.4)	35 (8.1)	91 (21.2)

\* Excludes operators of bicycles, snowmobiles, farm tractors, and other non-highway vehicles.

Figure 8-1  
Alcohol Use and Age of Driver  
Ontario, 1996

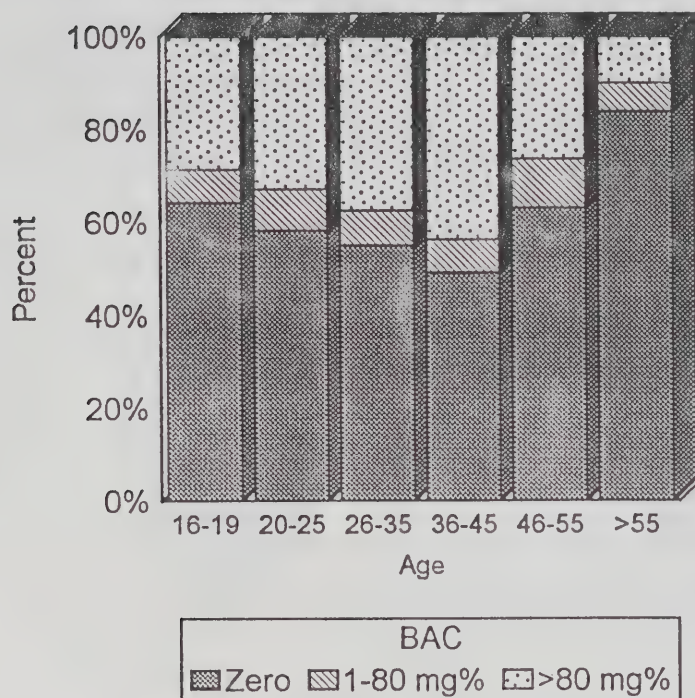
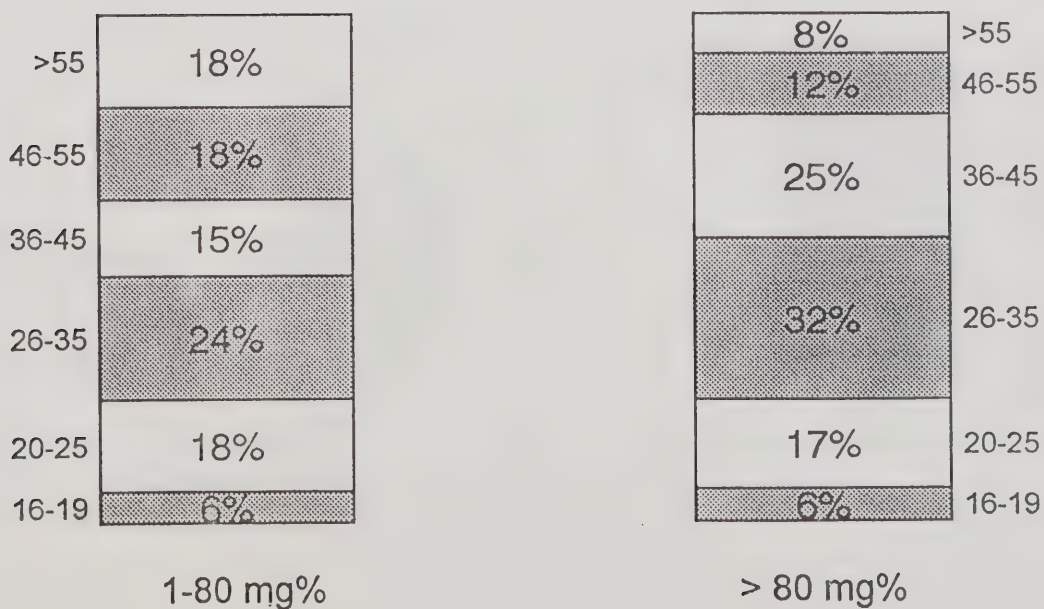


Figure 8-2  
Proportion of Drinking Drivers by Age  
Ontario, 1996



**Table 8-2**

Alcohol Use Among Fatally Injured Drivers:  
Sex of Drivers  
(Ontario, 1996)

SEX	Number Of Drivers*	Drivers Tested (% of total)	Drivers Grouped by BAC (mg%) (% of tested)				
			Zero	1-49	50-80	81-150	>150
MALE	389	331 (85.1)	197 (59.5)	22 (6.6)	6 (1.8)	32 (9.7)	74 (22.4)
FEMALE	134	99 (73.9)	74 (74.7)	5 (5.1)	0 (0.0)	3 (3.0)	17 (17.2)
TOTAL	523	430 (82.2)	271 (63.0)	27 (6.3)	6 (1.4)	35 (8.1)	91 (21.2)

\* Excludes operators of bicycles, snowmobiles, farm tractors, and other non-highway vehicles.



Figure 8-3  
Alcohol Use Among Male and Female  
Drivers: Ontario, 1996

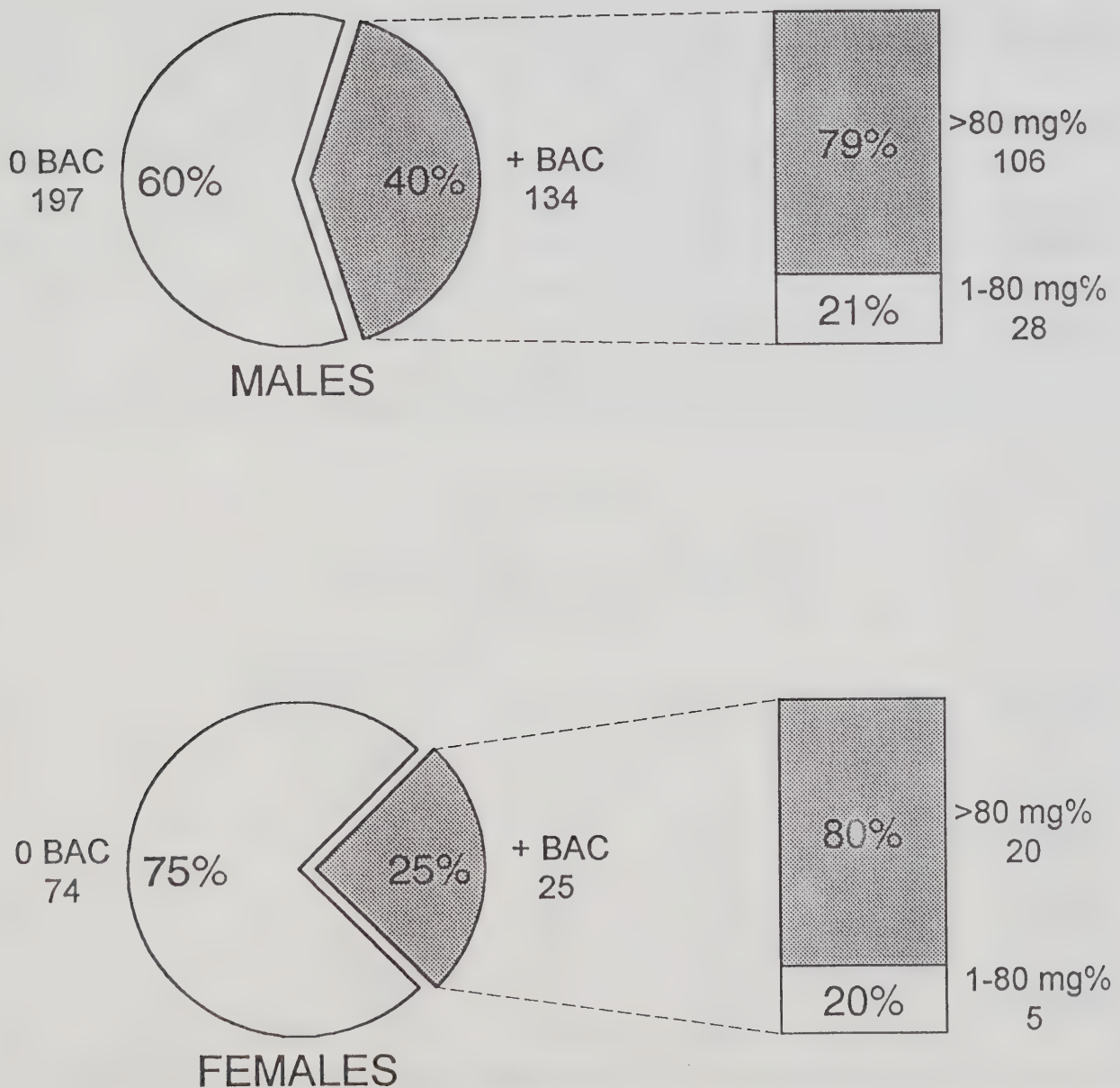


Table 8-3

Alcohol Use Among Fatally Injured Drivers:  
Type of Vehicle Operated

VEHICLE TYPE	Number Of Drivers*	Drivers Tested (% of total)	Drivers Grouped by BAC (mg%) (% of tested)				
			Zero	1-49	50-80	81-150	>150
AUTO	372	304 (81.7)	193 (63.5)	22 (7.2)	2 (0.7)	26 (8.6)	61 (20.1)
TRUCK-VAN	114	94 (82.5)	58 (61.7)	4 (4.3)	1 (1.1)	4 (4.3)	27 (28.7)
MOTORCYCLE	32	27 (84.4)	15 (55.6)	1 (3.7)	3 (11.1)	5 (18.5)	3 (11.1)
TRACTOR- TRAILER	5	5 (100.0)	5 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
TOTAL	523	430 (82.2)	271 (63.0)	27 (6.3)	6 (1.4)	35 (8.1)	91 (21.2)

Table 8-4

Alcohol Use Among Fatally Injured Drivers:  
Type of Collision

COLLISION TYPE	Number Of Drivers*	Drivers Tested (% of total)	Drivers Grouped by BAC (mg%) (% of tested)				
			Zero	1-49	50-80	81-150	>150
SINGLE- VEHICLE	200	174 (87.0)	70 (40.2)	10 (5.7)	3 (1.7)	23 (13.2)	68 (39.1)
MULTIPLE- VEHICLE	322	256 (79.5)	201 (78.5)	17 (6.6)	3 (1.2)	12 (4.7)	23 (9.0)
TOTAL	522	430 (82.4)	271 (63.0)	27 (6.3)	6 (1.4)	35 (8.1)	91 (21.2)

\* Excludes operators of bicycles, snowmobiles, farm tractors, and other non-highway vehicles.

Figure 8-4a  
Alcohol Use Among Drivers of Different  
Vehicle Types: Ontario, 1996

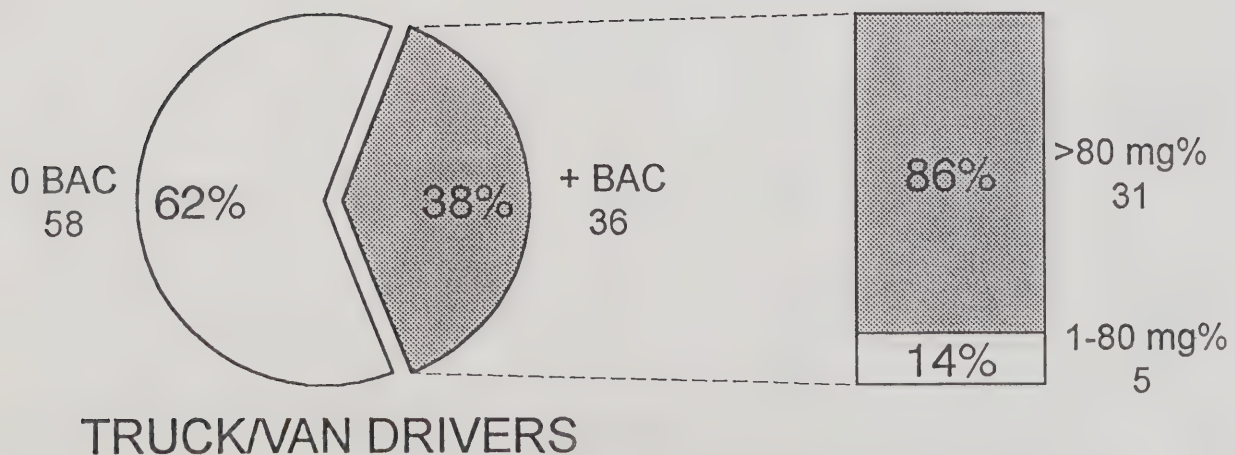
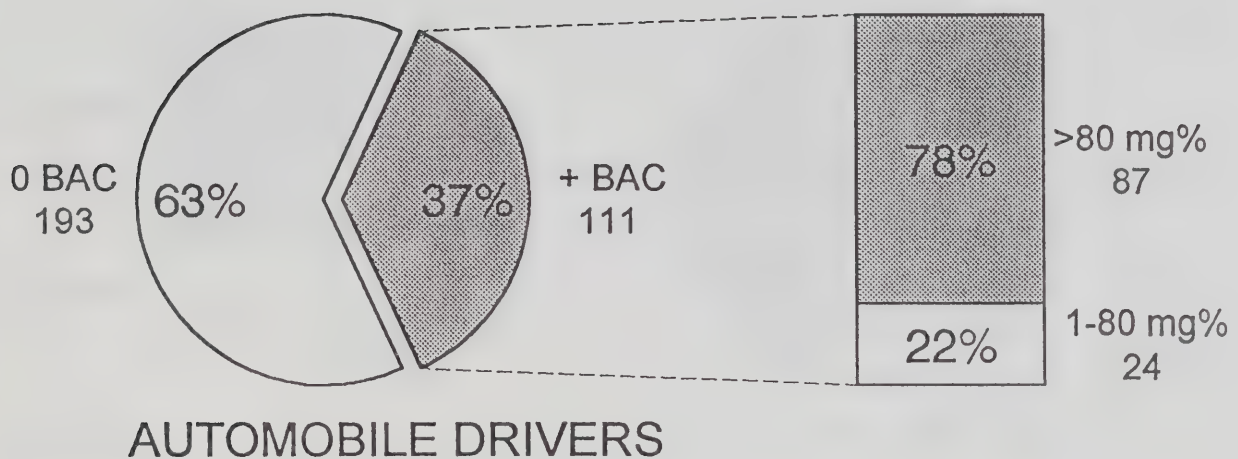
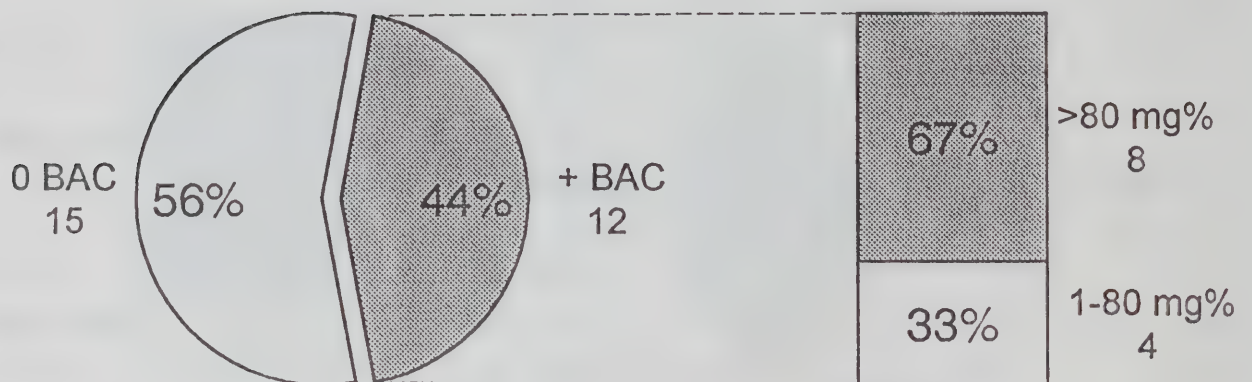
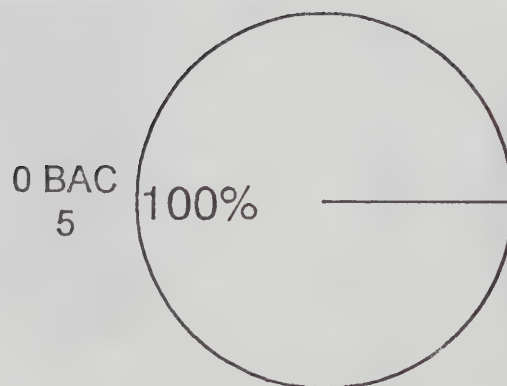


Figure 8-4b  
Alcohol Use Among Drivers of Different  
Vehicle Types: Ontario, 1996



MOTORCYCLISTS



TRACTOR-TRAILER DRIVERS



Figure 8-5  
Alcohol Use Among Drivers: Type of  
Collision: Ontario, 1996

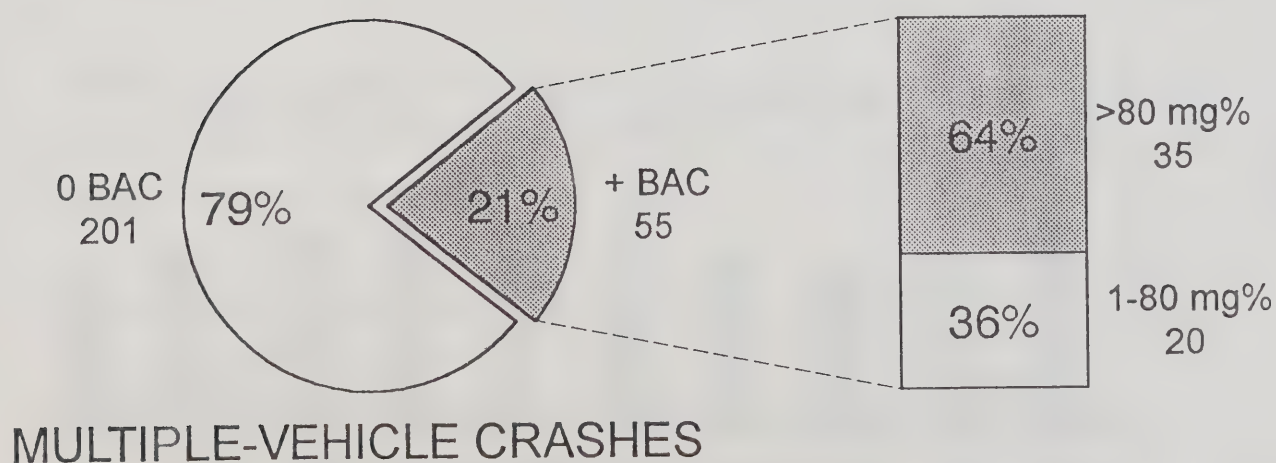
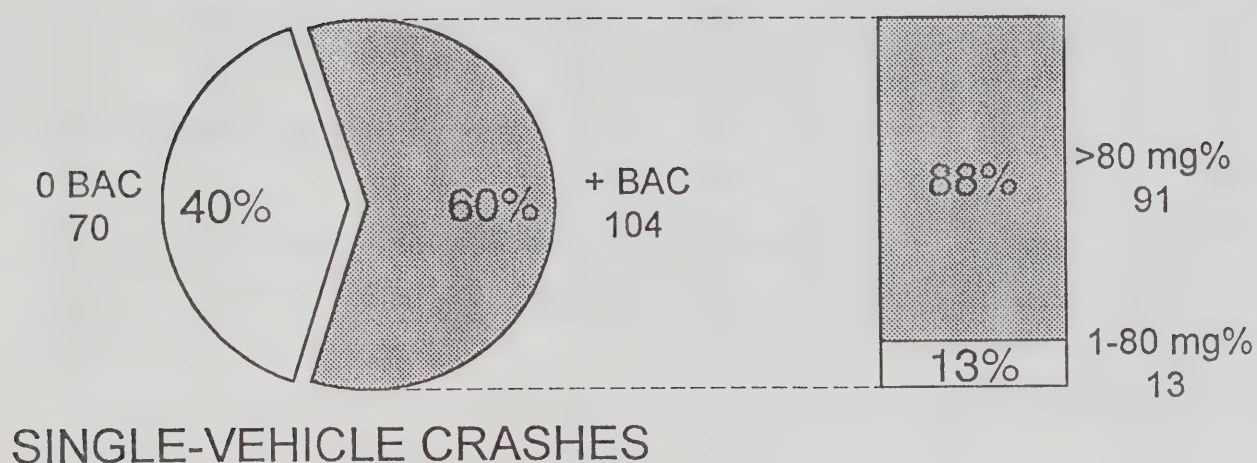


Table 8-5

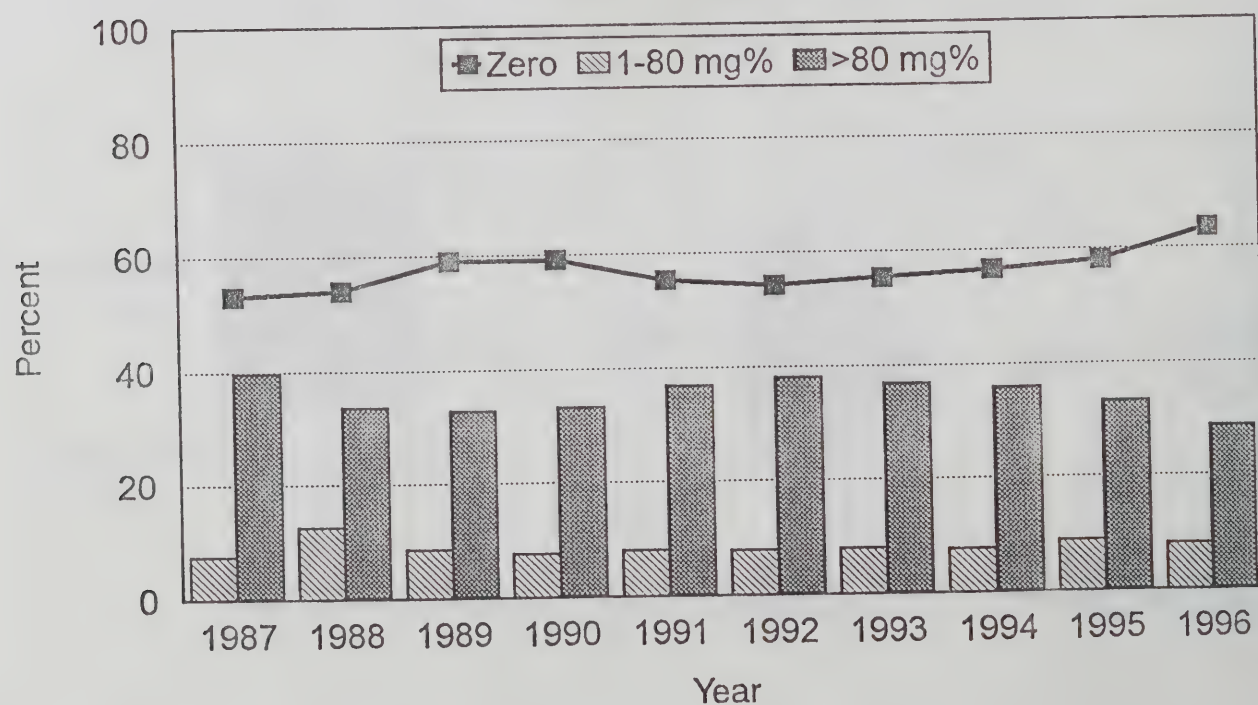
Alcohol Use Among Fatally Injured Drivers:  
Ontario, 1987-1996

YEAR	Number Of Drivers*	Drivers Tested	(% Total)	Drivers Grouped by BAC (mg%)					
				Zero	(% Tested)	1-80	(% Tested)	>80	(% Tested)
1987	613	540	88.1	286	53.0	40	7.4	214	39.6
1988	555	521	93.9	281	53.9	65	12.5	175	33.6
1989	642	586	91.3	345	58.9	49	8.4	192	32.8
1990	545	486	89.2	287	59.1	37	7.6	162	33.3
1991	531	462	87.0	255	55.2	37	8.0	170	36.8
1992	538	473	87.9	256	54.1	37	7.8	180	38.1
1993	604	519	85.9	287	55.3	41	7.9	191	36.8
1994	548	508	92.7	287	56.5	38	7.5	183	36.0
1995	532	480	90.2	278	57.9	42	8.8	160	33.3
1996	424	402	94.8	255	63.4	32	8.0	115	28.6

\* dying in less than six hours.

Figure 8-6

Trends in Alcohol Use Among Driver  
Fatalities: Ontario, 1987-1996



## **9.0 QUEBEC:**

### **Alcohol Use Among Fatally Injured Drivers**

This portion of the report contains a brief review of the major findings regarding alcohol use among drivers fatally injured in traffic collisions in Quebec.

The first section provides a review of general findings for 1996, and the second section examines trends in alcohol use among driver fatalities.

#### **9.1 GENERAL FINDINGS: 1996**

Tables 9-1 to 9-4 contain the data on which the various figures in this section are based. Table 9-1 contains information on alcohol use by drivers of various age groups; Table 9-2 compares male and female drivers; Table 9-3 provides information on alcohol use by drivers of different types of vehicles; and, Table 9-4 shows alcohol levels found in drivers involved in single- and multiple-vehicle collisions.

Each table shows the number of drivers killed, the number and percent who were tested for alcohol, and, the results of those tests -- this includes the number and percent of the tested drivers who showed no evidence of alcohol as well as the number and percent who were positive for alcohol in each of four BAC ranges.

**9.1.1 Rates of Testing for Alcohol.** Quebec had a testing rate in 1996 below the Canadian average -- 74.9% of fatally injured drivers were tested for the presence of alcohol in Quebec compared to 83% in Canada.

**9.1.2 Incidence of Alcohol.** As the totals at the bottom of Table 9-1 indicates, among tested drivers in Quebec:

- o 57.7% showed no evidence of alcohol;
- o 3.7% had BACs below 50 mg%;

- o 1.7% had BACs from 50 to 80 mg%;
- o 9.6% had BACs from 81 to 150 mg%; and,
- o 27.3% had BACs over 150 mg%.

Thus, 42.3% of fatally injured drivers in Quebec had been drinking and most of these had illegal BACs.

o *Age.* Table 9-1 and Figure 9-1 show the incidence of alcohol among drivers of various ages. For each age group, the solid portion of the bar indicates the percent of drivers in that age group who were sober. As can be seen, drivers aged 20-25, 26-35 and 36-45 were the least likely to be sober -- the most likely to have been drinking; 47% to 48% of drivers in these age groups were sober -- 52% to 53% of these drivers had been drinking. By contrast, 78% of drivers over 55 showed no evidence of alcohol.

Figure 9-2 shows the proportion of all drinking-drivers accounted for by each age group. The left bar indicates the percent of drinking drivers with BACs of 80 mg% or less accounted for by each age group. On the right are comparable data for drivers with BACs over the statutory limit. As can be seen, drivers age 36-45 account for 26% of drivers with BACs below the statutory limit. Among legally impaired drivers, 25% were between the ages of 26 and 35 and 24% were aged 36 to 45.

o *Gender.* As shown in Table 9-2 and Figure 9-3, alcohol use was related to the *gender of the driver*. Fatally injured male drivers were more likely to have been drinking than female drivers (45% and 28%, respectively). Among those who were drinking, drivers with BACs over the legal limit were far more prevalent in both groups. Among fatally injured drinking drivers, 86% of males had BACs over 80 mg%; while 94% of females had BACs over the statutory limit.

o *Type of Vehicle.* Alcohol use varied as a function of the *type of vehicle* being operated, as shown in Table 9-3 and illustrated in Figures 9-4a and 9-4b. About 44% of fatally injured drivers of automobiles and 41% of the drivers of trucks/vans were



found to have been drinking. Alcohol was also detected in 38% of the motorcycle riders and 18% of tractor-trailer drivers. About 88% of drinking drivers operating automobiles, 95% of those operating trucks/vans and 83% of motorcycle riders had BACs over the legal limit. Neither of the two drinking tractor-trailer drivers had an illegal BAC.

*o Type of Collision.* The incidence of alcohol also varied as a function of *type of collision* (see Table 9-4). Alcohol was found far more often in drivers involved in single-vehicle collisions than in those involved in multiple-vehicle collisions. As shown in Figure 9-5, some 59% of the drivers involved in single-vehicle crashes were positive for alcohol, compared to only 28% of those involved in multiple-vehicle collisions. Higher BACs were more characteristic of single-vehicle crashes -- 92% of the drinking drivers in single-vehicle crashes had BACs over the legal limit, compared to 80% in multiple-vehicle crashes.

## 9.2 TRENDS IN ALCOHOL USE AMONG DRIVERS

Data on alcohol use among fatally injured drivers in Quebec from 1987 to 1996 are presented in Table 9-5. These data are illustrated in Figure 9-6, which shows changes between 1987 and 1996 in the percent of fatally injured drivers who: (1) showed no evidence of alcohol; (represented by the line) (2) had BACs below the legal limit (the striped bars); and (3) had BACs over the legal limit (the solid bars).

As can be seen, the incidence of "sober" drivers had generally increased, peaking in 1993. There was a slight drop in 1994 but the percent of sober drivers has again increased. The incidence of drivers with BACs above the legal limit has declined over this ten-year period reaching its lowest level in 1993. Since then there has been a slight increase among this group. The percent of drivers with BACs from 1-80 mg% fell to its lowest level in 1996.

**Table 9-1**

**Alcohol Use Among Fatally Injured Drivers:  
Age of Drivers  
(Quebec, 1996)**

AGE	Number Of Drivers*	Drivers Tested (% of total)	Drivers Grouped by BAC (mg%) (% of tested)				
			Zero	1-49	50-80	81-150	>150
<16	2	2 (100.0)	2 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
16-17	13	10 (76.9)	7 (70.0)	1 (10.0)	0 (0.0)	0 (0.0)	2 (20.0)
18-19	43	31 (72.1)	18 (58.1)	0 (0.0)	2 (6.5)	5 (16.1)	6 (19.4)
20-25	70	53 (75.7)	25 (47.2)	1 (1.9)	1 (1.9)	6 (11.3)	20 (37.7)
26-35	86	69 (80.2)	33 (47.8)	3 (4.3)	0 (0.0)	8 (11.6)	25 (36.2)
36-45	88	71 (80.7)	34 (47.9)	3 (4.2)	2 (2.8)	7 (9.9)	25 (35.2)
46-55	67	55 (82.1)	36 (65.5)	2 (3.6)	1 (1.8)	6 (10.9)	10 (18.2)
>55	105	64 (61.0)	50 (78.1)	3 (4.7)	0 (0.0)	2 (3.1)	9 (14.1)
TOTAL	474	355 (74.9)	205 (57.7)	13 (3.7)	6 (1.7)	34 (9.6)	97 (27.3)

\* Excludes operators of bicycles, snowmobiles, farm tractors, and other non-highway vehicles.

Figure 9-1  
Alcohol Use and Age of Driver  
Quebec, 1996

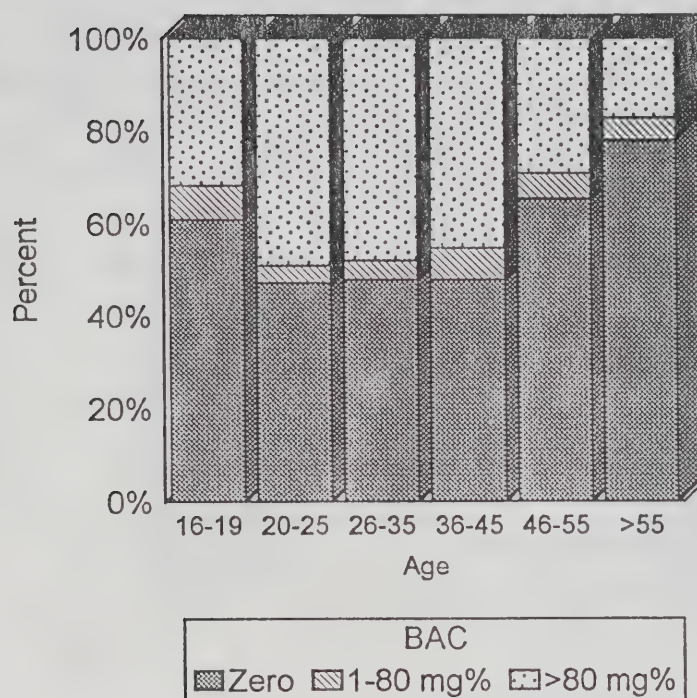
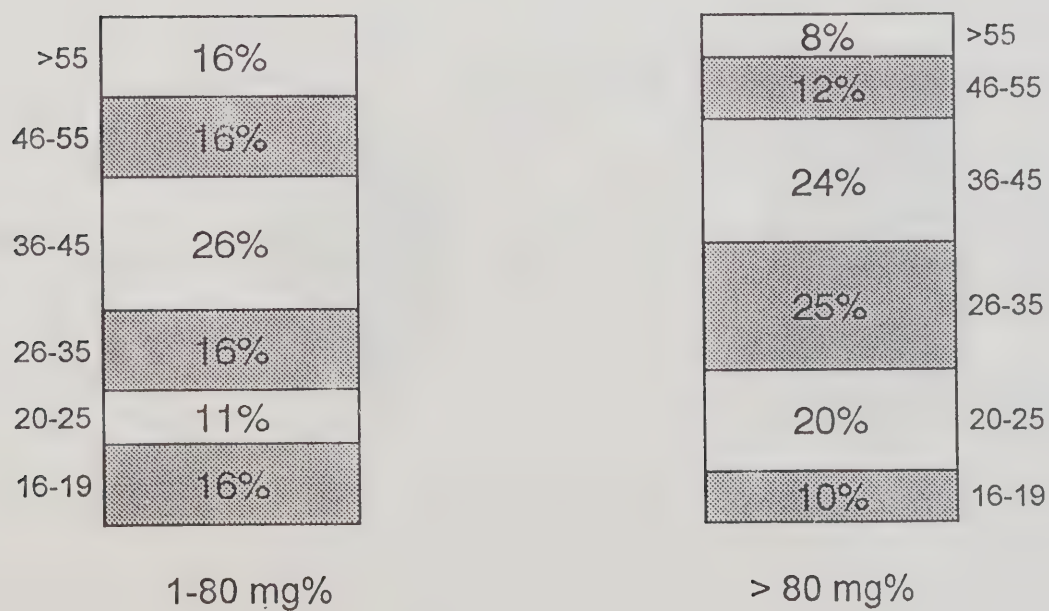


Figure 9-2  
Proportion of Drinking Drivers by Age  
Quebec, 1996



**Table 9-2**

Alcohol Use Among Fatally Injured Drivers:  
Sex of Drivers  
(Quebec, 1996)

SEX	Number Of Drivers*	Drivers Tested (% of total)	Drivers Grouped by BAC (mg%) (% of tested)				
			Zero	1-49	50-80	81-150	>150
MALE	385	294 (76.4)	161 (54.8)	12 (4.1)	6 (2.0)	33 (11.2)	82 (27.9)
FEMALE	89	61 (68.5)	44 (72.1)	1 (1.6)	0 (0.0)	1 (1.6)	15 (24.6)
TOTAL	474	355 (74.9)	205 (57.7)	13 (3.7)	6 (1.7)	34 (9.6)	97 (27.3)

\* Excludes operators of bicycles, snowmobiles, farm tractors, and other non-highway vehicles.



Figure 9-3  
Alcohol Use Among Male and Female  
Drivers: Quebec, 1996

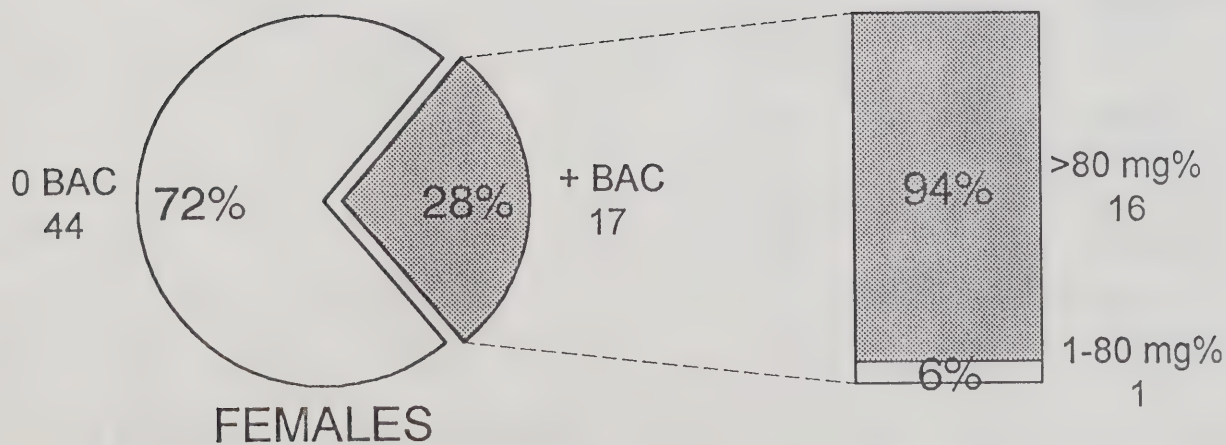
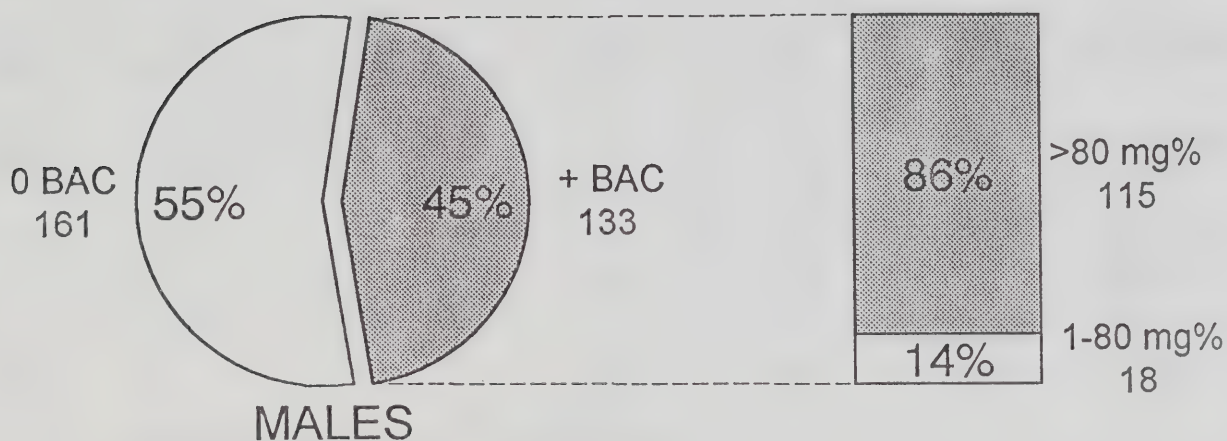


Table 9-3

Alcohol Use Among Fatally Injured Drivers:  
Type of Vehicle Operated

VEHICLE TYPE	Number Of Drivers*	Drivers Tested (% of total)	Drivers Grouped by BAC (mg%) (% of tested)				
			Zero	1-49	50-80	81-150	>150
AUTO	349	263 (75.4)	147 (55.9)	9 (3.4)	5 (1.9)	28 (10.6)	74 (28.1)
TRUCK-VAN	64	49 (76.6)	29 (59.2)	0 (0.0)	1 (2.0)	4 (8.2)	15 (30.6)
MOTORCYCLE	49	32 (65.3)	20 (62.5)	2 (6.3)	0 (0.0)	2 (6.3)	8 (25.0)
TRACTOR- TRAILER	12	11 (91.7)	9 (81.8)	2 (18.2)	0 (0.0)	0 (0.0)	0 (0.0)
TOTAL	474	355 (74.9)	205 (57.7)	13 (3.7)	6 (1.7)	34 (9.6)	97 (27.3)

Table 9-4

Alcohol Use Among Fatally Injured Drivers:  
Type of Collision

COLLISION TYPE	Number Of Drivers*	Drivers Tested (% of total)	Drivers Grouped by BAC (mg%) (% of tested)				
			Zero	1-49	50-80	81-150	>150
SINGLE- VEHICLE	206	164 (79.6)	68 (41.5)	3 (1.8)	5 (3.0)	14 (8.5)	74 (45.1)
MULTIPLE- VEHICLE	267	190 (71.2)	136 (71.6)	10 (5.3)	1 (0.5)	20 (10.5)	23 (12.1)
TOTAL	473	354 (74.8)	204 (57.6)	13 (3.7)	6 (1.7)	34 (9.6)	97 (27.4)

\* Excludes operators of bicycles, snowmobiles, farm tractors, and other non-highway vehicles.

Figure 9-4a  
Alcohol Use Among Drivers of Different  
Vehicle Types: Quebec, 1996

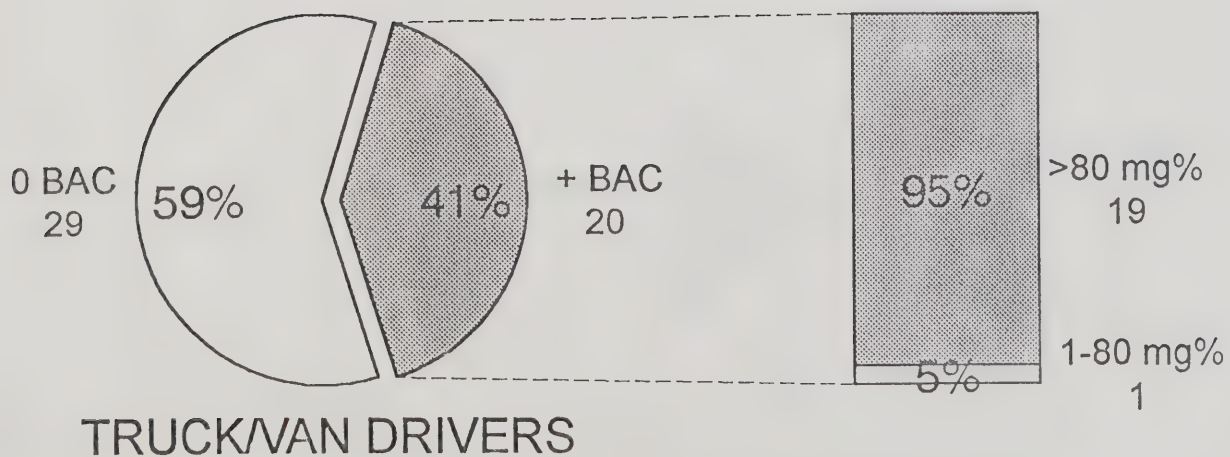
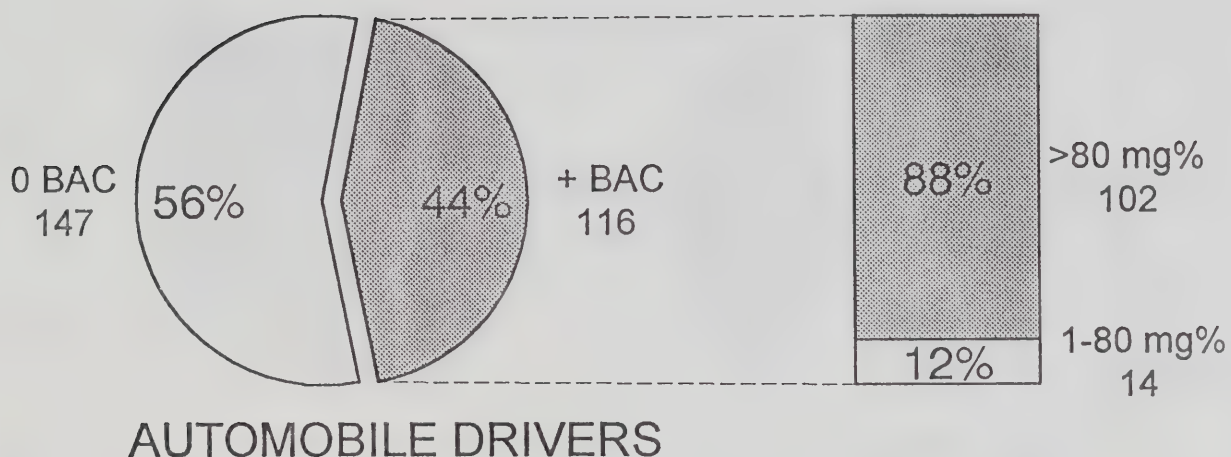


Figure 9-4b  
Alcohol Use Among Drivers of Different  
Vehicle Types: Quebec, 1996

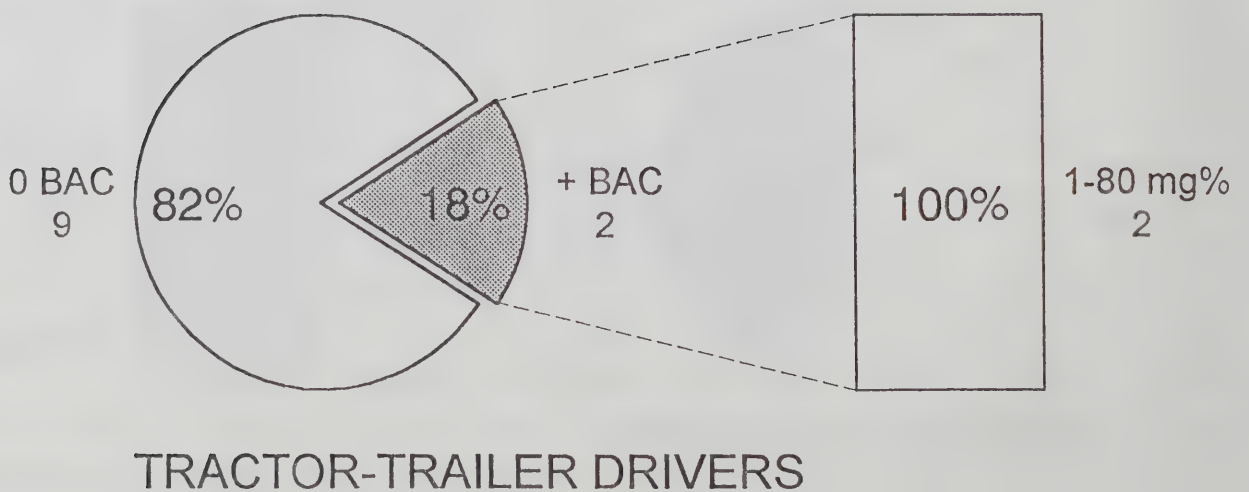
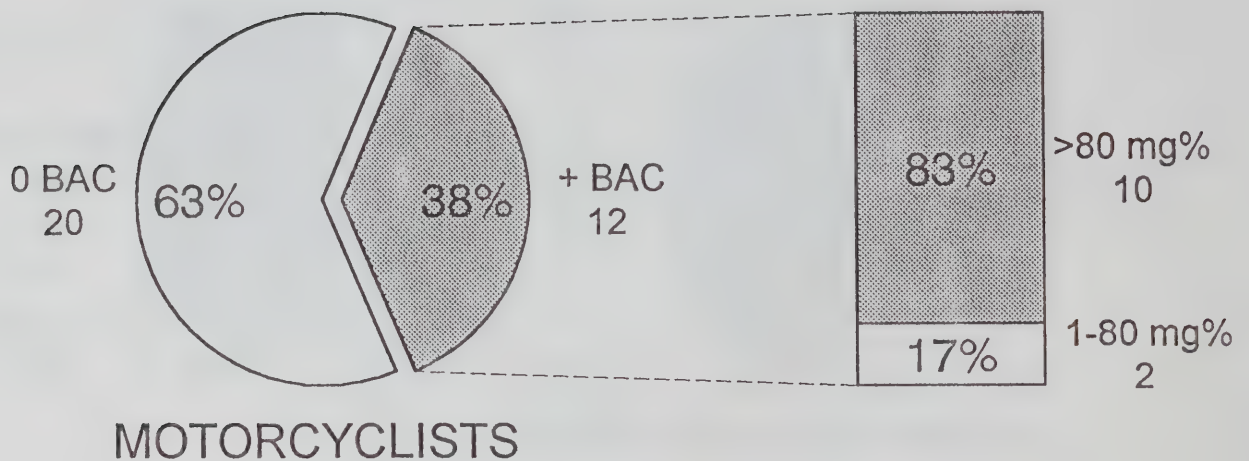




Figure 9-5  
Alcohol Use Among Drivers: Type of  
Collision: Quebec, 1996

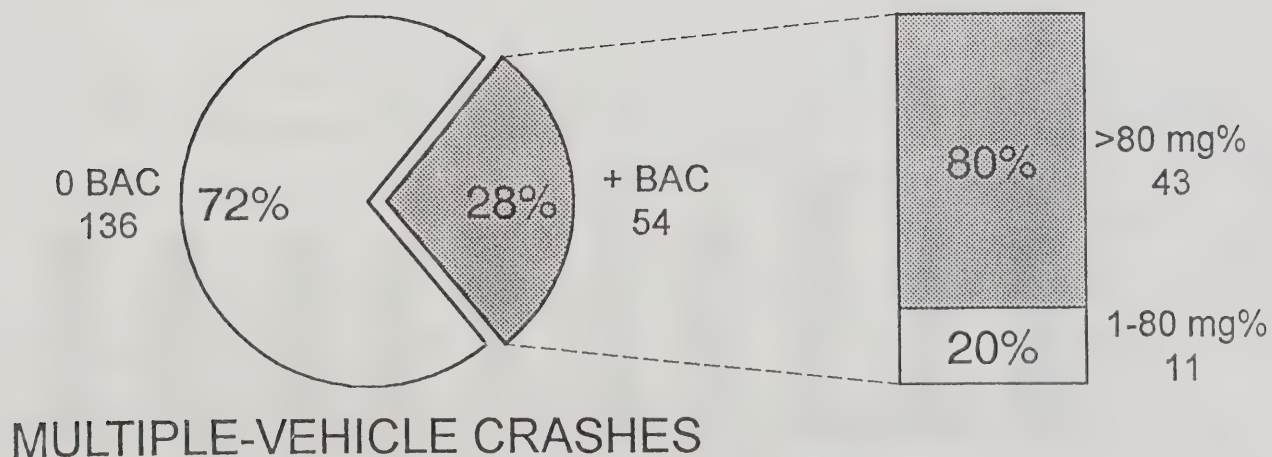
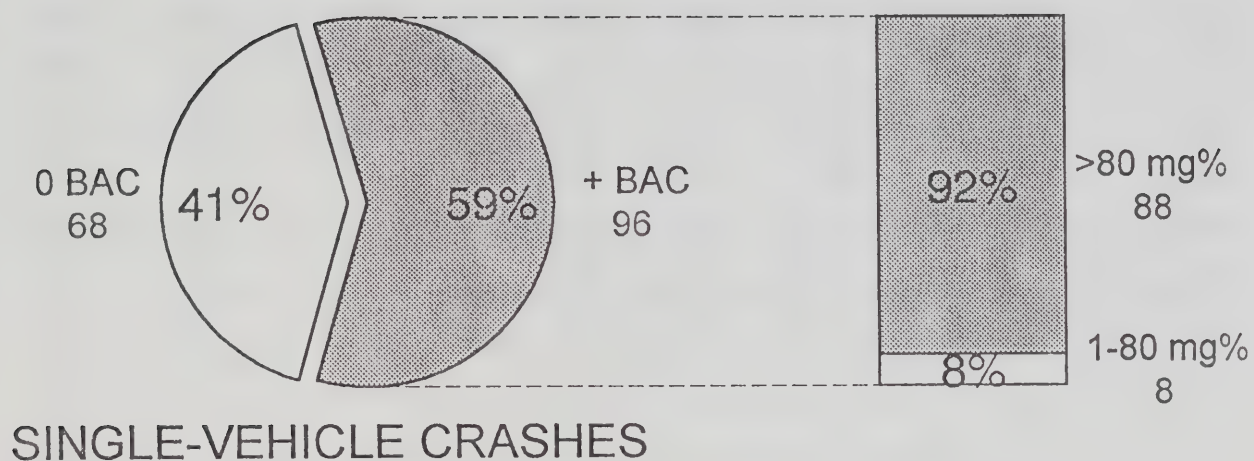


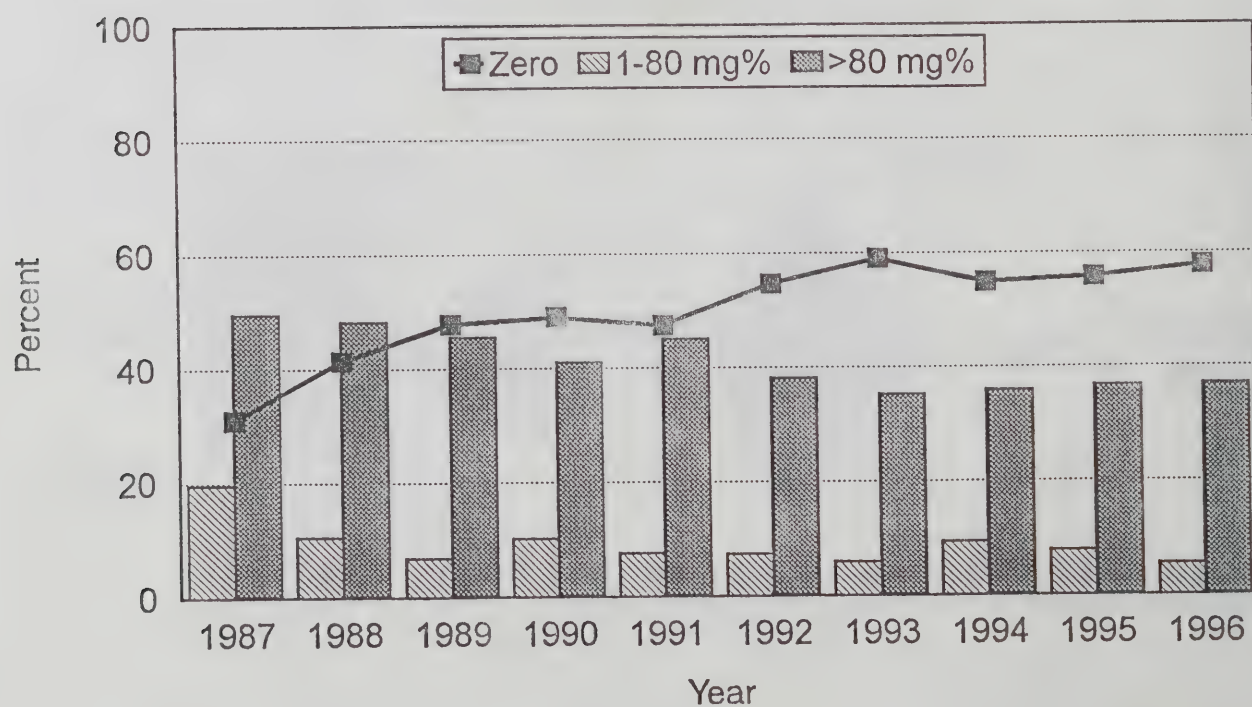
Table 9-5

Alcohol Use Among Fatally Injured Drivers:  
Quebec, 1987-1996

YEAR	Number Of Drivers	Drivers Tested	(% Total)	Drivers Grouped by BAC (mg%)					
				Zero	(% Tested)	1-80	(% Tested)	>80	(% Tested)
1987	567	301	53.1	93	30.9	59	19.6	149	49.5
1988	631	392	62.1	162	41.3	41	10.5	189	48.2
1989	657	426	64.8	203	47.7	29	6.8	194	45.5
1990	582	395	67.9	193	48.9	40	10.1	162	41.0
1991	559	380	68.0	180	47.4	29	7.6	171	45.0
1992	512	383	74.8	209	54.6	28	7.3	146	38.1
1993	499	406	81.4	239	58.9	24	5.9	143	35.2
1994	448	332	74.1	182	54.8	31	9.3	119	35.8
1995	465	361	77.6	201	55.7	28	7.8	132	36.6
1996	474	355	74.9	205	57.7	19	5.4	131	36.9

Figure 9-6

Trends in Alcohol Use Among Driver  
Fatalities: Quebec, 1987-1996



## **10.0 NEW BRUNSWICK:**

### **Alcohol Use Among Fatally Injured Drivers**

This portion of the report contains a brief review of the major findings regarding alcohol use among drivers fatally injured in traffic collisions in New Brunswick.

The first section provides a review of general findings for 1996, and the second section examines trends in alcohol use among driver fatalities.

#### **10.1 GENERAL FINDINGS: 1996**

Tables 10-1 to 10-4 contain the data on which the various figures in this section are based. Table 10-1 contains information on alcohol use by drivers of various age groups; Table 10-2 compares male and female drivers; Table 10-3 provides information on alcohol use by drivers of different types of vehicles; and, Table 10-4 shows alcohol levels found in drivers involved in single- and multiple-vehicle collisions.

Each table shows the number of drivers killed, the number and percent who were tested for alcohol, and the results of those tests -- this includes the number and percent of the tested drivers who showed no evidence of alcohol as well as the number and percent who were positive for alcohol in each of four BAC ranges.

**10.1.1 Rates of Testing for Alcohol.** New Brunswick had high testing rate in 1996, with 86.2% of fatally injured drivers being tested for the presence of alcohol (see Table 10-1).

**10.1.2 Incidence of Alcohol.** As the totals at the bottom of Table 10-1 indicate, among tested drivers in New Brunswick:

- o 62.0% showed no evidence of alcohol;
- o 4.0% had BACs from 1 to 49 mg%;

- o 4.0% had BACs from 50 to 80 mg%;
- o 14.0% had BACs from 81 to 150 mg%; and,
- o 16.0% had BACs over 150 mg%.

Thus, 38% of fatally injured drivers in New Brunswick who were tested for alcohol had been drinking and most of these had illegal BACs.

*o Age.* Table 10-1 and Figure 10-1 show the incidence of alcohol among drivers of various ages. For each age group, the solid portion of the bar indicates the percent of drivers in that age group who were sober. As can be seen, drivers age 36-45 were the least likely to be sober -- the most likely to have been drinking; only 36% of drivers were sober. By contrast, most drivers over 55 years of age (91%) showed no evidence of alcohol.

Figure 10-2 shows the proportion of drinking drivers accounted for by each age group. The left bar indicates the percent of drinking drivers with BACs of 80 mg% or less accounted for by each age group. On the right are comparable data for drivers with BACs over the statutory limit. As can be seen, drivers 16-19, 20-25, 26-35 and over 55 each account for 25% of those with BACs between 1 and 80 mg%. Among fatally injured drinking drivers with BACs over the legal limit, 47% were between 36-45 years of age.

*o Gender.* As shown in Table 10-2 and Figure 10-3, alcohol use was related to the *gender of the driver*. Fatally injured male drivers were far more likely to have been drinking than female drivers (48% and 18%, respectively). Among male drivers who were drinking, most had BACs over the legal limit (81%). Two of the three drinking-driving females (67%) had BACs over 80 mg%.

*o Type of vehicle.* Alcohol use varied as a function of the *type of vehicle* being operated, as shown in Table 10-3 and illustrated in Figures 10-4a and 10-4b. Some 40% of fatally injured drivers of automobiles and 31% of the drivers of trucks/vans were found to have been drinking. The fatally injured motorcyclist that was



tested had been drinking but the tested tractor-trailer driver was sober. Among fatally injured drinking drivers, 79% of automobile drivers and 75% of drivers of trucks/vans had BACs over the legal limit. The fatally injured drinking motorcyclist was also over the legal BAC limit.

*o Type of Collision.* The incidence of alcohol also varied as a function of the *type of collision* (see Table 10-4). Alcohol was found far more often in drivers involved in single-vehicle collisions than among those involved in multiple-vehicle collisions. As shown in Figure 10-5, some 73% of the drivers involved in single-vehicle crashes were positive for alcohol, compared to only 23% in multiple-vehicle collisions. High BACs dominated among drinking drivers in both single- and multiple-vehicle crashes. Among drinking drivers involved in single-vehicle crashes, 82% had BACs over the legal limit as did 75% of drinking drivers in multiple-vehicle crashes.

## 10.2 TRENDS IN ALCOHOL USE AMONG DRIVERS

Data on alcohol use among fatally injured drivers over the ten-year period from 1987-1996 are shown in Table 10-5. Trends are illustrated in Figure 10-6 which shows changes in the percent of fatally injured drivers who: (1) were sober (represented by the line); (2) had BACs below the legal limit (given by the striped bars); and (3) had BACs over the legal limit (the solid bars).

As can be seen, the incidence of sober drivers increased from 1987 to 1990, declined until 1993 and has increased in the past three years. The incidence of drivers with illegal BACs generally increased from 1987 to 1993, but has decreased since then. In 1996, the incidence of drivers with illegal BACs reached a low of 31%. The percent of fatally injured drivers with BACs of 1-80 mg% has increased since 1994.

**Table 10-1**

**Alcohol Use Among Fatally Injured Drivers:  
Age of Drivers  
(New Brunswick, 1996)**

AGE	Number Of Drivers*	Drivers Tested (% of total)	Drivers Grouped by BAC (mg%) (% of tested)				
			Zero	1-49	50-80	81-150	>150
16-17	3	3 (100.0)	2 (66.7)	0 (0.0)	0 (0.0)	1 (33.3)	0 (0.0)
18-19	2	2 (100.0)	1 (50.0)	1 (50.0)	0 (0.0)	0 (0.0)	0 (0.0)
20-25	12	9 (75.0)	4 (44.4)	1 (11.1)	0 (0.0)	2 (22.2)	2 (22.2)
26-35	7	7 (100.0)	5 (71.4)	0 (0.0)	1 (14.3)	1 (14.3)	0 (0.0)
36-45	12	11 (91.7)	4 (36.4)	0 (0.0)	0 (0.0)	2 (18.2)	5 (45.5)
46-55	9	7 (77.8)	5 (71.4)	0 (0.0)	0 (0.0)	1 (14.3)	1 (14.3)
>55	13	11 (84.6)	10 (90.9)	0 (0.0)	1 (9.1)	0 (0.0)	0 (0.0)
<b>TOTAL</b>	<b>58</b>	<b>50 (86.2)</b>	<b>31 (62.0)</b>	<b>2 (4.0)</b>	<b>2 (4.0)</b>	<b>7 (14.0)</b>	<b>8 (16.0)</b>

\* Excludes operators of bicycles, snowmobiles, farm tractors, and other non-highway vehicles.

Figure 10-1  
Alcohol Use and Age of Driver  
New Brunswick, 1996

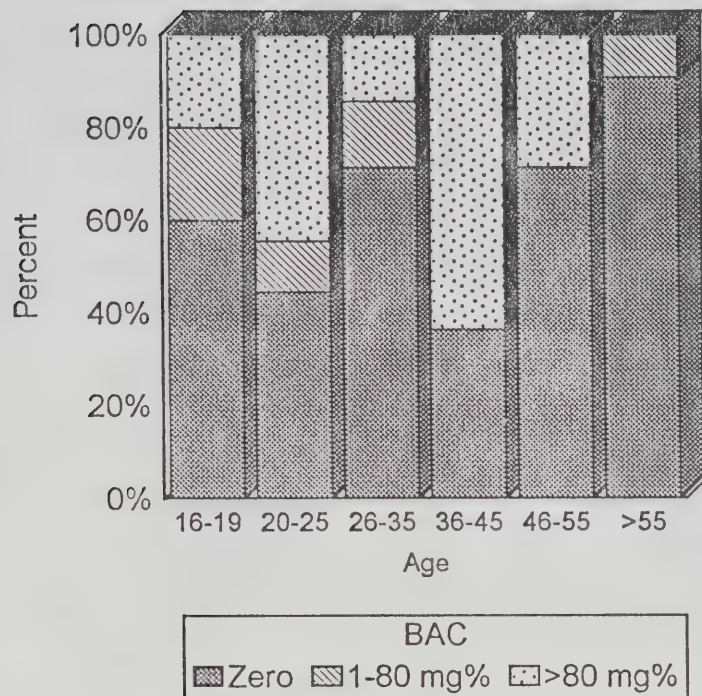


Figure 10-2  
Proportion of Drinking Drivers by Age  
New Brunswick, 1996

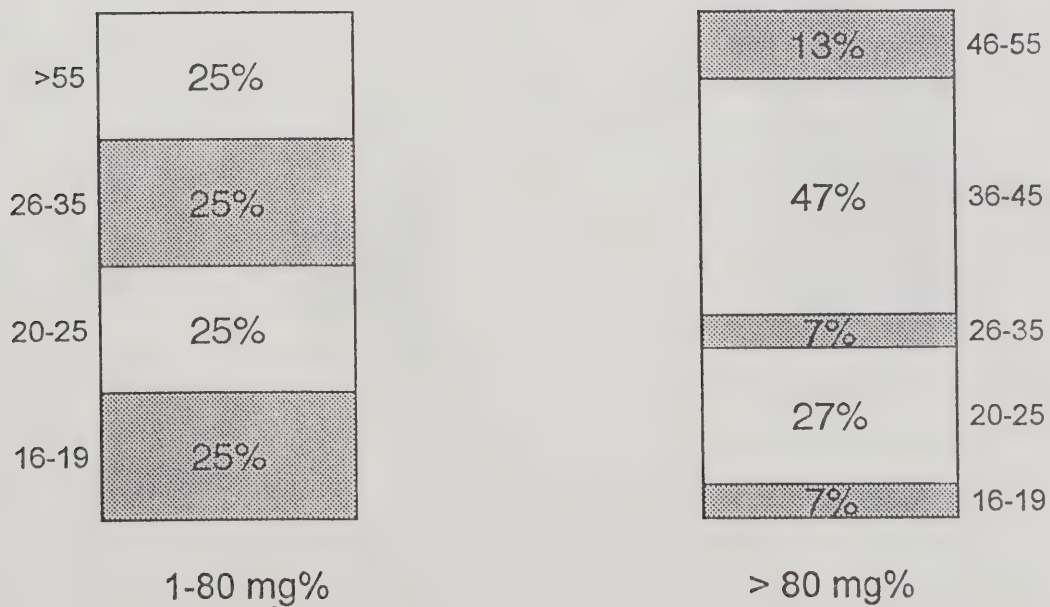


Table 10-2

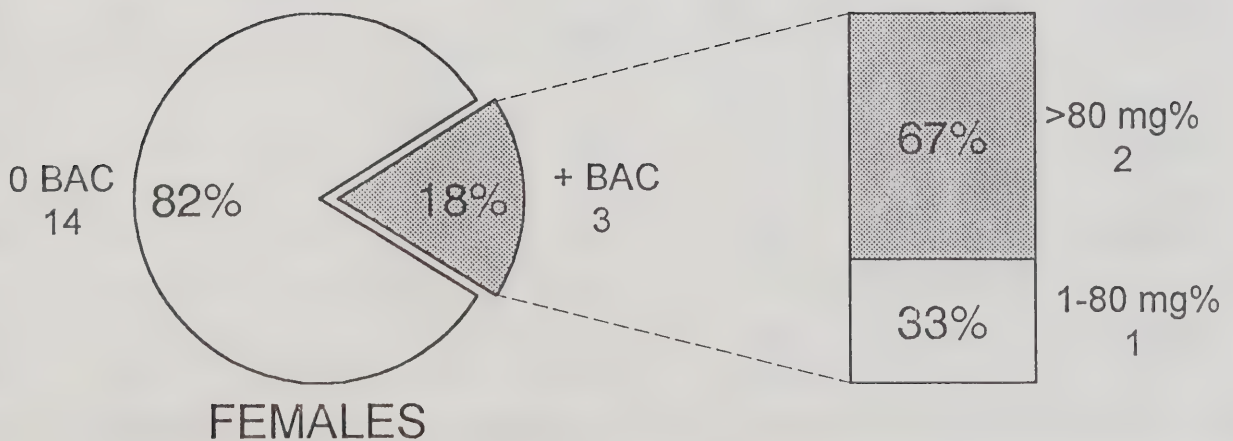
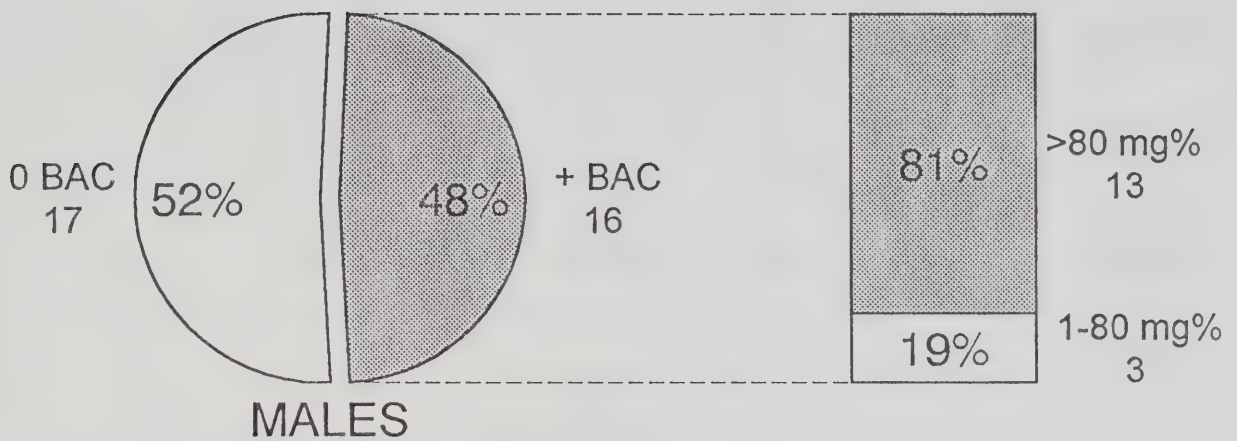
Alcohol Use Among Fatally Injured Drivers:  
Sex of Drivers  
(New Brunswick, 1996)

SEX	Number Of Drivers*	Drivers Tested (% of total)	Drivers Grouped by BAC (mg%) (% of tested)				
			Zero	1-49	50-80	81-150	>150
MALE	39	33 (84.6)	17 (51.5)	1 (3.0)	2 (6.1)	5 (15.2)	8 (24.2)
FEMALE	19	17 (89.5)	14 (82.4)	1 (5.9)	0 (0.0)	2 (11.8)	0 (0.0)
TOTAL	58	50 (86.2)	31 (62.0)	2 (4.0)	2 (4.0)	7 (14.0)	8 (16.0)

\* Excludes operators of bicycles, snowmobiles, farm tractors, and other non-highway vehicles.



Figure 10-3  
Alcohol Use Among Male and Female  
Drivers: New Brunswick, 1996



**Table 10-3**

Alcohol Use Among Fatally Injured Drivers:  
Type of Vehicle Operated

VEHICLE TYPE	Number Of Drivers*	Drivers Tested (% of total)	Drivers Grouped by BAC (mg%) (% of tested)				
			Zero	1-49	50-80	81-150	>150
AUTO	41	35 (85.4)	21 (60.0)	1 (2.9)	2 (5.7)	4 (11.4)	7 (20.0)
TRUCK-VAN	13	13 (100.0)	9 (69.2)	1 (7.7)	0 (0.0)	2 (15.4)	1 (7.7)
MOTORCYCLE	2	1 (50.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)	0 (0.0)
TRACTOR- TRAILER	2	1 (50.0)	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
TOTAL	58	50 (86.2)	31 (62.0)	2 (4.0)	2 (4.0)	7 (14.0)	8 (16.0)

**Table 10-4**

Alcohol Use Among Fatally Injured Drivers:  
Type of Collision

COLLISION TYPE	Number Of Drivers*	Drivers Tested (% of total)	Drivers Grouped by BAC (mg%) (% of tested)				
			Zero	1-49	50-80	81-150	>150
SINGLE- VEHICLE	21	15 (71.4)	4 (26.7)	2 (13.3)	0 (0.0)	2 (13.3)	7 (46.7)
MULTIPLE- VEHICLE	37	35 (94.6)	27 (77.1)	0 (0.0)	2 (5.7)	5 (14.3)	1 (2.9)
TOTAL	58	50 (86.2)	31 (62.0)	2 (4.0)	2 (4.0)	7 (14.0)	8 (16.0)

\* Excludes operators of bicycles, snowmobiles, farm tractors, and other non-highway vehicles.

Figure 10-4a  
Alcohol Use Among Drivers of Different  
Vehicle Types: New Brunswick, 1996

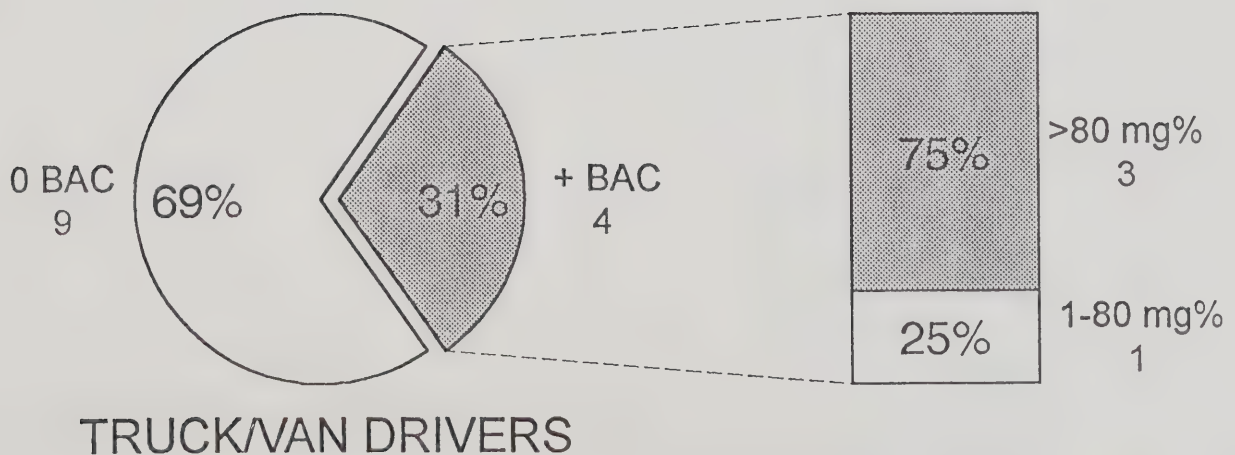
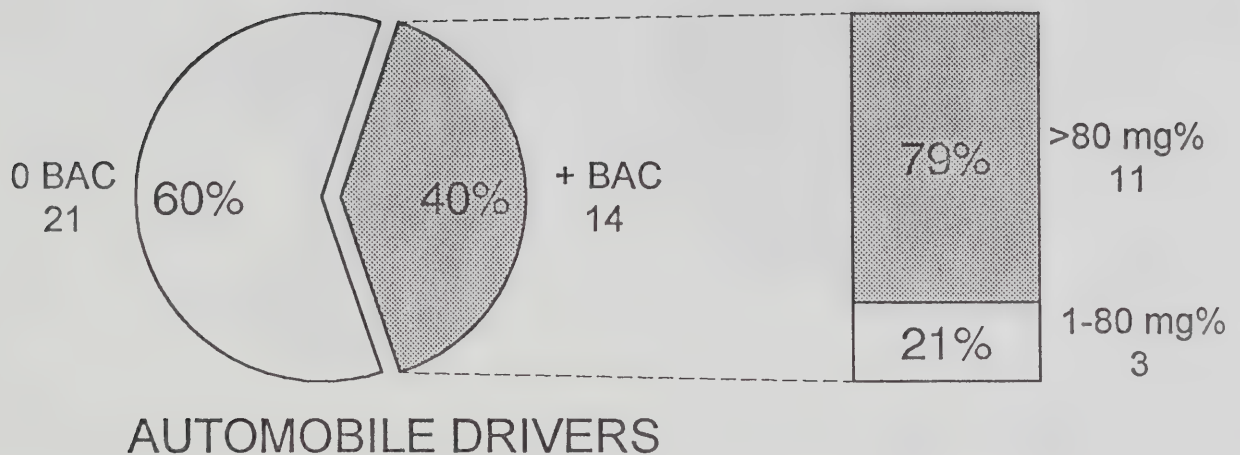
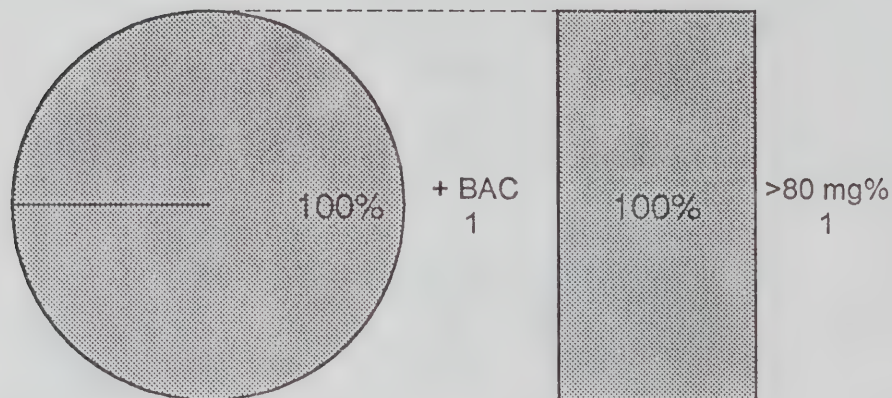
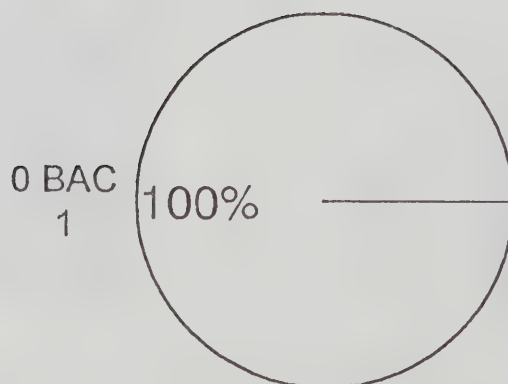


Figure 10-4b  
Alcohol Use Among Drivers of Different  
Vehicle Types: New Brunswick, 1996



MOTORCYCLISTS



TRACTOR-TRAILER DRIVERS



Figure 10-5  
Alcohol Use Among Drivers: Type of  
Collision: New Brunswick, 1996

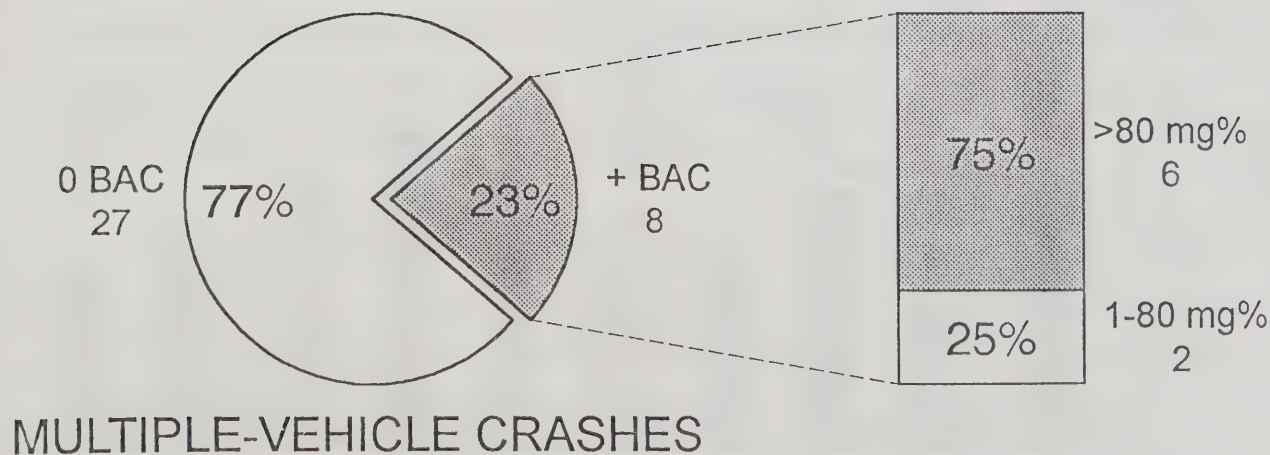
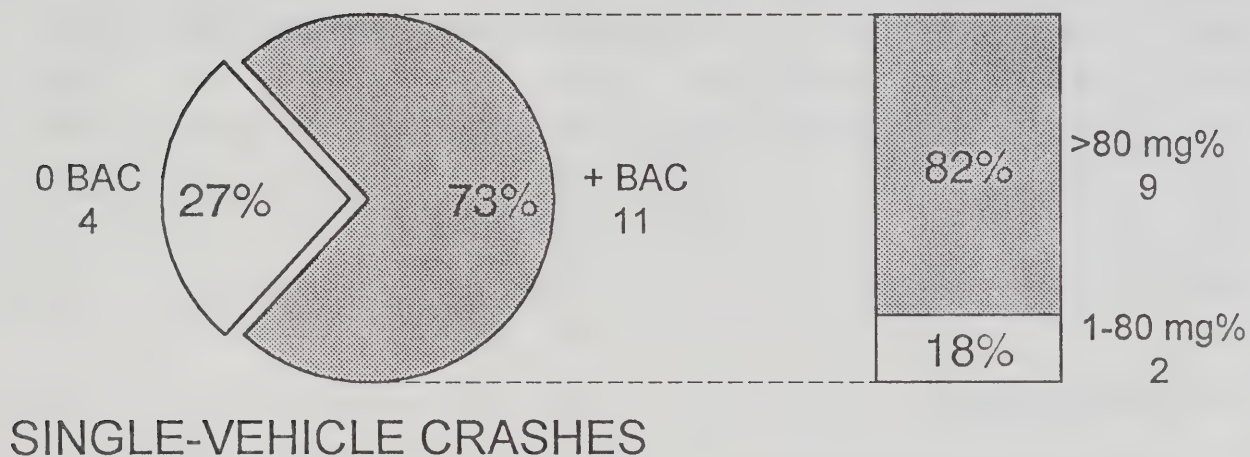


Table 10-5

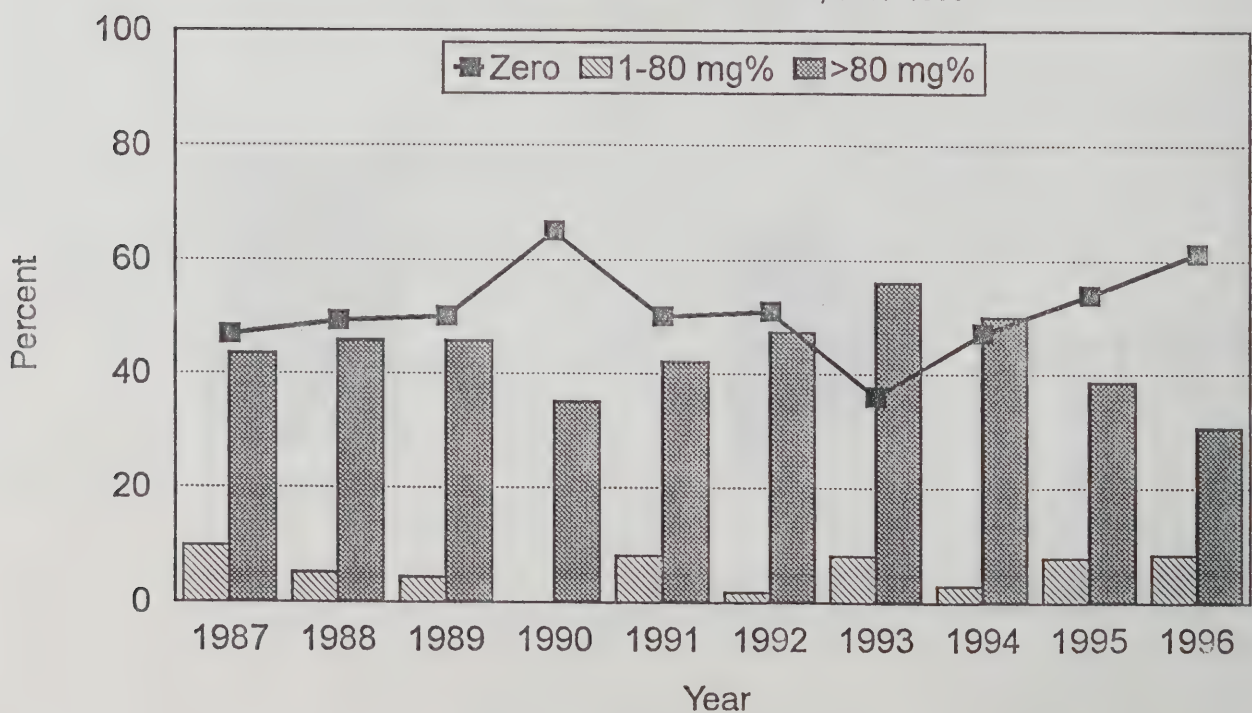
Alcohol Use Among Fatally Injured Drivers:  
New Brunswick, 1987-1996

YEAR	Number Of Drivers*	Drivers Tested	(% Total)	Drivers Grouped by BAC (mg%)					
				Zero	(% Tested)	1-80	(% Tested)	>80	(% Tested)
1987	73	62	84.9	29	46.8	6	9.7	27	43.5
1988	82	59	72.0	29	49.2	3	5.1	27	45.8
1989	68	46	67.6	23	50.0	2	4.3	21	45.7
1990	78	74	94.9	48	64.9	0	0.0	26	35.1
1991	51	50	98.0	25	50.0	4	8.0	21	42.0
1992	64	55	85.9	28	50.9	1	1.8	26	47.3
1993	70	50	71.4	18	36.0	4	8.0	28	56.0
1994	38	34	89.5	16	47.1	1	2.9	17	50.0
1995	61	52	85.2	28	53.8	4	7.7	20	38.5
1996	53	49	92.5	30	61.2	4	8.2	15	30.6

\* dying in less than six hours.

Figure 10-6

Trends in Alcohol Use Among Driver  
Fatalities: New Brunswick, 1987-1996



## **11.0 PRINCE EDWARD ISLAND:**

### **Alcohol Use Among Fatally Injured Drivers**

This portion of the report contains a brief review of the major findings regarding alcohol use among drivers fatally injured in traffic collisions in Prince Edward Island. The small number of cases -- 15 drivers -- compromises the reliability and generality of these findings. **Results should be treated cautiously.**

The first section provides a review of general findings for 1996, and the second section examines trends in alcohol use among driver fatalities.

#### **11.1 GENERAL FINDINGS: 1996**

Table 11-1 contains information on alcohol use by drivers of various age groups; Table 11-2 compares male and female drivers; Table 11-3 provides information on alcohol use by drivers of different types of vehicles; and, Table 11-4 shows alcohol levels found in drivers involved in single- and multiple-vehicle collisions. Figures are not provided owing to the small number of cases.

Each table shows the number of drivers killed, the number and percent who were tested for alcohol, and the results of those tests -- this includes the number and percent of the tested drivers who showed no evidence of alcohol as well as the number and percent who were positive for alcohol in each of four BAC ranges.

**11.1.1 Rates of Testing for Alcohol.** Prince Edward Island had a high rate in 1996 with 86.7% of fatally injured drivers being tested for the presence of alcohol (see Table 11-1). *Due to the small number of motor vehicle fatalities in Prince Edward Island, the generality of the following results must be treated with caution.*

**11.1.2 Incidence of Alcohol.** As the totals at the bottom of Table 11-1 indicate, among the 13 tested drivers in Prince Edward Island:

- o nine drivers (69.2%) showed no evidence of alcohol;
- o one driver (7.7%) had a BAC from 1 to 49 mg%;
- o one driver (7.7%) had a BAC from 81 to 150 mg%; and
- o two drivers (15.4%) had a BAC over 150 mg%.

Thus, 31% of fatally injured drivers in Prince Edward Island had been drinking and three of the four drinking drivers had illegal BACs.

*o Age.* Table 11-1 shows the incidence of alcohol among drivers of various ages. Drivers age 16-17, 18-19 and those over 55 were all sober. The fatally injured drinking drivers age 36-55 had illegal BACs.

*o Gender.* As shown in Table 11-2 alcohol use was related to the *gender of the driver*. Six of the nine fatally injured male drivers (67%) tested were sober as were three of the four female drivers (75%) tested for alcohol. Among fatally injured drinking drivers, two out of three males (67%) and the one female had illegal BACs.

*o Type of Vehicle.* Table 11-3 shows that three of the ten fatally injured automobile drivers (30%) had been drinking. One of the two fatally injured motorcyclists (50%) had been drinking and the fatally injured truck/van driver was sober. Among fatally injured drinking drivers, two out of three automobile drivers (67%) and the one motorcyclist had illegal BACs.

*o Type of Collision.* Alcohol was found more often in drivers involved in single-vehicle collisions than in those involved in multiple-vehicle collisions. As shown in Table 11-4, three of the six (50%) drivers involved in single-vehicle crashes tested positive for alcohol, while one of the seven (14%) drivers in multiple-vehicle collisions had been drinking. All three fatally injured drinking drivers involved in single-vehicle collisions had BACs over the legal limit while the fatally injured drinking driver in the



multiple-vehicle crash had a BAC of under 80 mg%.

## **11.2 TRENDS IN ALCOHOL USE AMONG AUTOMOBILE DRIVERS**

Data on alcohol use among fatally injured drivers over the ten-year period from 1987-1996 are shown in Table 11-5. As can be seen, the small number of cases produces substantial variability in the data over time; thus, trends cannot readily be discerned.

**Table 11-1**

Alcohol Use Among Fatally Injured Drivers:  
Age of Drivers  
(Prince Edward Island, 1996)

AGE	Number Of Drivers*	Drivers Tested (% of total)	Drivers Grouped by BAC (mg%) (% of tested)				
			Zero	1-49	50-80	81-150	>150
16-17	2	2 (100.0)	2 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
18-19	1	1 (100.0)	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
20-25	2	2 (100.0)	1 (50.0)	1 (50.0)	0 (0.0)	0 (0.0)	0 (0.0)
26-35	3	2 (66.7)	1 (50.0)	0 (0.0)	0 (0.0)	1 (50.0)	0 (0.0)
36-55	3	2 (66.7)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	2 (100.0)
>55	4	4 (100.0)	4 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
TOTAL	15	13 (86.7)	9 (69.2)	1 (7.7)	0 (0.0)	1 (7.7)	2 (15.4)

\* Excludes operators of bicycles, snowmobiles, farm tractors, and other non-highway vehicles.

**Table 11-2**

Alcohol Use Among Fatally Injured Drivers:  
Sex of Drivers  
(Prince Edward Island, 1996)

SEX	Number Of Drivers*	Drivers Tested (% of total)	Drivers Grouped by BAC (mg%) (% of tested)				
			Zero	1-49	50-80	81-150	>150
MALE	11	9 (81.8)	6 (66.7)	1 (11.1)	0 (0.0)	1 (11.1)	1 (11.1)
FEMALE	4	4 (100.0)	3 (75.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (25.0)
TOTAL	15	13 (86.7)	9 (69.2)	1 (7.7)	0 (0.0)	1 (7.7)	2 (15.4)

\* Excludes operators of bicycles, snowmobiles, farm tractors, and other non-highway vehicles.

**Table 11-3**

Alcohol Use Among Fatally Injured Drivers:  
Type of Vehicle Operated

VEHICLE TYPE	Number Of Drivers*	Drivers Tested (% of total)	Drivers Grouped by BAC (mg%) (% of tested)				
			Zero	1-49	50-80	81-150	>150
AUTO	12	10 (83.3)	7 (70.0)	1 (10.0)	0 (0.0)	0 (0.0)	2 (20.0)
TRUCK-VAN	1	1 (100.0)	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
MOTORCYCLE	2	2 (100.0)	1 (50.0)	0 (0.0)	0 (0.0)	1 (50.0)	0 (0.0)
TOTAL	15	13 (86.7)	9 (69.2)	1 (7.7)	0 (0.0)	1 (7.7)	2 (15.4)

**Table 11-4**

Alcohol Use Among Fatally Injured Drivers:  
Type of Collision

COLLISION TYPE	Number Of Drivers*	Drivers Tested (% of total)	Drivers Grouped by BAC (mg%) (% of tested)				
			Zero	1-49	50-80	81-150	>150
SINGLE- VEHICLE	7	6 (85.7)	3 (50.0)	0 (0.0)	0 (0.0)	1 (16.7)	2 (33.3)
MULTIPLE- VEHICLE	8	7 (87.5)	6 (85.7)	1 (14.3)	0 (0.0)	0 (0.0)	0 (0.0)
TOTAL	15	13 (86.7)	9 (69.2)	1 (7.7)	0 (0.0)	1 (7.7)	2 (15.4)

\* Excludes operators of bicycles, snowmobiles, farm tractors, and other non-highway vehicles.



**Table 11-5**

**Alcohol Use Among Fatally Injured Drivers:  
Prince Edward Island, 1987-1996**

YEAR	Number Of Drivers		(% Total)	Drivers Grouped by BAC (mg%)					
	Drivers*	Tested		Zero	(% Tested)	1-80	(% Tested)	>80	(% Tested)
1987	6	5	83.3	2	40.0	0	0.0	3	60.0
1988	9	8	88.9	4	50.0	0	0.0	4	50.0
1989	8	5	62.5	2	40.0	0	0.0	3	60.0
1990	10	9	90.0	4	44.4	3	33.3	2	22.2
1991	16	16	100.0	11	68.8	1	6.3	4	25.0
1992	7	6	85.7	3	50.0	1	16.7	2	33.3
1993	9	8	88.9	3	37.5	0	0.0	5	62.5
1994	11	11	100.0	7	63.6	1	9.1	3	27.3
1995	9	8	88.9	3	37.5	2	25.0	3	37.5
1996	13	13	100.0	9	69.2	1	7.7	3	23.1

\* dying in less than six hours.



## **12.0 NOVA SCOTIA:**

### **Alcohol Use Among Fatally Injured Drivers**

This portion of the report contains a brief review of the major findings regarding alcohol use among drivers fatally injured in traffic collisions in Nova Scotia.

The first section provides a review of general findings for 1996, and the second section examines trends in alcohol use among driver fatalities.

#### **12.1 GENERAL FINDINGS: 1996**

Tables 12-1 to 12-4 contain the raw data on which the various figures in this section are based. Table 12-1 contains information on alcohol use by drivers of various age groups; Table 12-2 compares male and female drivers; Table 12-3 provides information on alcohol use by drivers of different types of vehicles; and, Table 12-4 shows alcohol levels found in drivers involved in single- and multiple-vehicle collisions.

Each table shows the number of drivers killed, the number and percent who were tested for alcohol, and the results of those tests -- this indicates the number and percent of the tested drivers who showed no evidence of alcohol as well as the number and percent who were positive for alcohol in each of four BAC ranges.

**12.1.1 Rates of Testing for Alcohol.** Nova Scotia had a testing rate in 1996 lower than the Canadian average, with only 71.9% of fatally injured drivers being tested for the presence of alcohol -- this compares to a national average of 83%.

**12.1.2 Incidence of Alcohol.** As the totals at the bottom of Table 12-1 indicate, among tested drivers in Nova Scotia:

- o 56.1% showed no evidence of alcohol;
- o 4.9% had BACs from 1 to 49 mg%;

- o 7.3% had BACs from 81 to 150 mg%; and,
- o 31.7% had BACs over 150 mg%.

Thus, 44% of fatally injured drivers in Nova Scotia who were tested for alcohol had been drinking and most of these had illegal BACs.

*o Age.* Table 12-1 and Figure 12-1 show the incidence of alcohol among drivers of various ages. For each age group, the solid portion of the bar indicates the percent of drivers in that age group who were sober. As can be seen, drivers aged 16-19 were the least likely to be sober -- the most likely to have been drinking; 67% of the drivers in this age group had been drinking. Sober drivers were more characteristic of those over 55 years of age -- 78% of drivers in this age group were sober.

Figure 12-2 shows the proportion of drinking drivers accounted for by each age group. The left bar indicates the percent of drinking drivers with BACs of 80 mg% or less accounted for by each age group. On the right are comparable data for drivers with BACs over the statutory limit. As can be seen, among drinking drivers with BACs of 80 mg% or less, drivers age 20-25 and 46-55 each accounted for 50%. Drivers age 26-35 accounted for 31% of those with BACs over the legal limit.

*o Gender.* As shown in Table 12-2 and Figure 12-3, alcohol use was related to the *gender of the driver*. Among fatally injured male drivers, 52% had been drinking compared to only 20% of female drivers. About 94% of the male drivers who were drinking had BACs over the legal limit and one of the two female drinking drivers (50%) had a BAC over the legal limit.

*o Type of vehicle.* Alcohol use varied as a function of the *type of vehicle* being operated, as shown in Table 12-3 and illustrated in Figures 12-4a and 12-4b. About 38% of fatally injured drivers of automobiles and 64% of the drivers of trucks/vans were found to have been drinking. The one fatally injured tractor-trailer driver was sober. Among drinking drivers, 82% of automobile drivers and all seven truck/van drivers had BACs over the legal limit.



*o Type of Collision.* The incidence of alcohol also varied as a function of *type of collision* (see Table 12-4). Alcohol was found far more often in drivers involved in single-vehicle collisions than in those involved in multiple-vehicle collisions. As shown in Figure 12-5, some 58% of the drivers involved in single-vehicle crashes were positive for alcohol, compared to only 20% in multiple-vehicle collisions. Of the drinking drivers in single-vehicle crashes, 100% had BACs over the legal limit compared to 33% of drivers in multiple-vehicle crashes.

## 12.2 TRENDS IN ALCOHOL USE AMONG AUTOMOBILE DRIVERS

Data on alcohol use among fatally injured drivers over the ten-year period from 1987-1996 are shown in Table 12-5. These data are illustrated in Figure 12-6 which shows changes in the percent of fatally injured drivers who: (1) were sober (illustrated by the line); (2) had BACs below the legal limit (shown by the striped bars); and (3) had BACs over the legal limit (the solid bars).

As can be seen, over this ten-year period the percent of fatally injured drivers with BACs over the legal limit has fluctuated considerably. However, since 1993, the percent of fatally injured drivers with BACs over 80 mg% has declined; the percent of sober drivers has generally increased since 1994. The percent of drivers with BACs between 1 and 80 mg% has dropped since 1994.

**Table 12-1**

Alcohol Use Among Fatally Injured Drivers:  
Age of Drivers  
(Nova Scotia, 1996)

AGE	Number Of Drivers*	Drivers Tested (% of total)	Drivers Grouped by BAC (mg%) (% of tested)				
			Zero	1-49	50-80	81-150	>150
16-17	1	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
18-19	5	3 (60.0)	1 (33.3)	0 (0.0)	0 (0.0)	0 (0.0)	2 (66.7)
20-25	11	9 (81.8)	4 (44.4)	1 (11.1)	0 (0.0)	1 (11.1)	3 (33.3)
26-35	15	12 (80.0)	7 (58.3)	0 (0.0)	0 (0.0)	1 (8.3)	4 (33.3)
36-45	8	5 (62.5)	2 (40.0)	0 (0.0)	0 (0.0)	1 (20.0)	2 (40.0)
46-55	4	3 (75.0)	2 (66.7)	1 (33.3)	0 (0.0)	0 (0.0)	0 (0.0)
>55	13	9 (69.2)	7 (77.8)	0 (0.0)	0 (0.0)	0 (0.0)	2 (22.2)
TOTAL	57	41 (71.9)	23 (56.1)	2 (4.9)	0 (0.0)	3 (7.3)	13 (31.7)

\* Excludes operators of bicycles, snowmobiles, farm tractors, and other non-highway vehicles.

Figure 12-1  
Alcohol Use and Age of Driver  
Nova Scotia, 1996

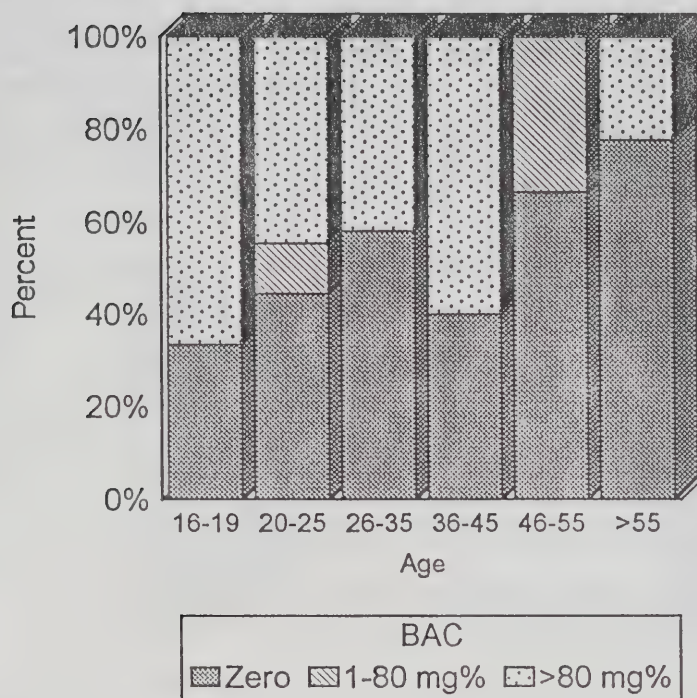
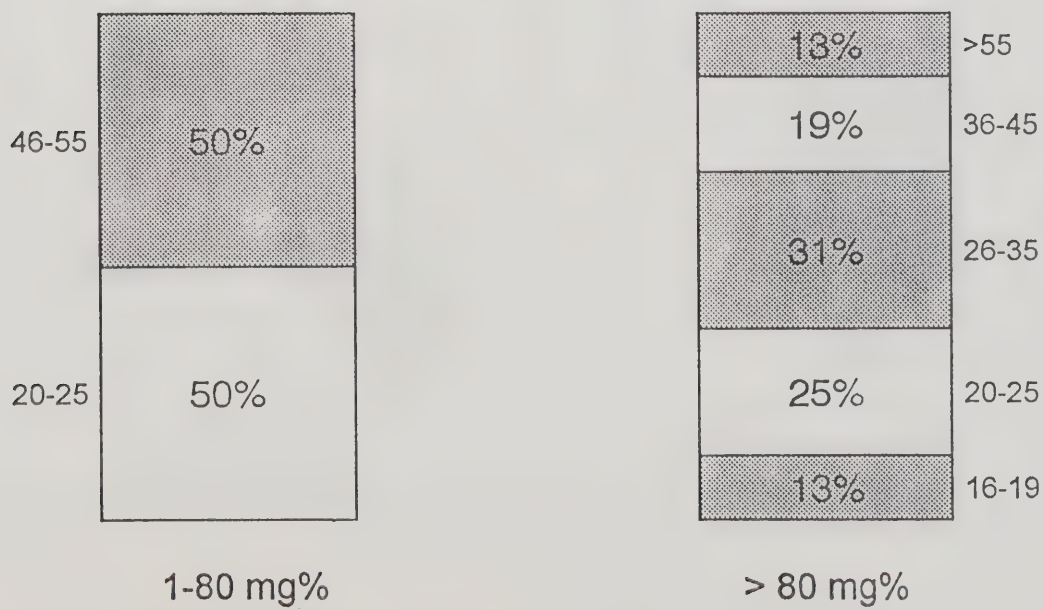


Figure 12-2  
Proportion of Drinking Drivers by Age  
Nova Scotia, 1996



**Table 12-2**

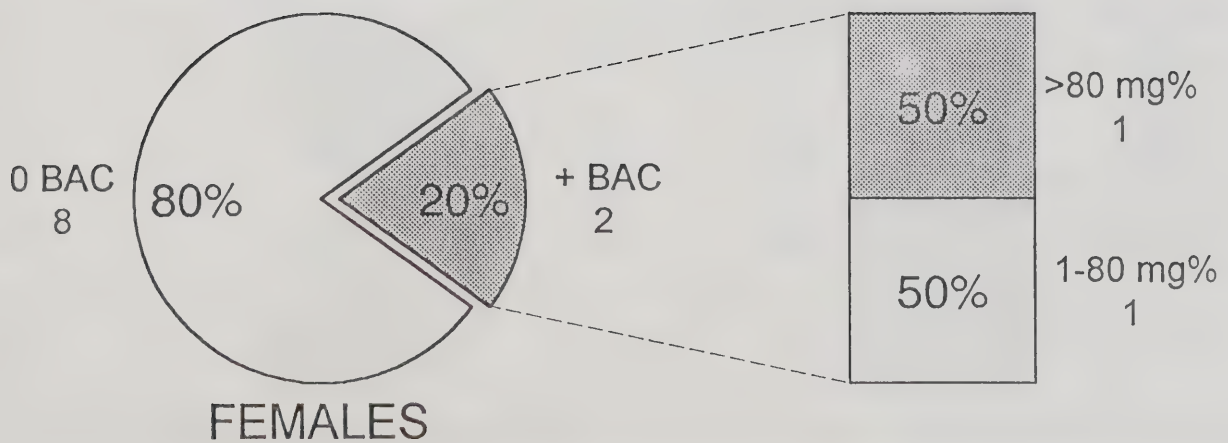
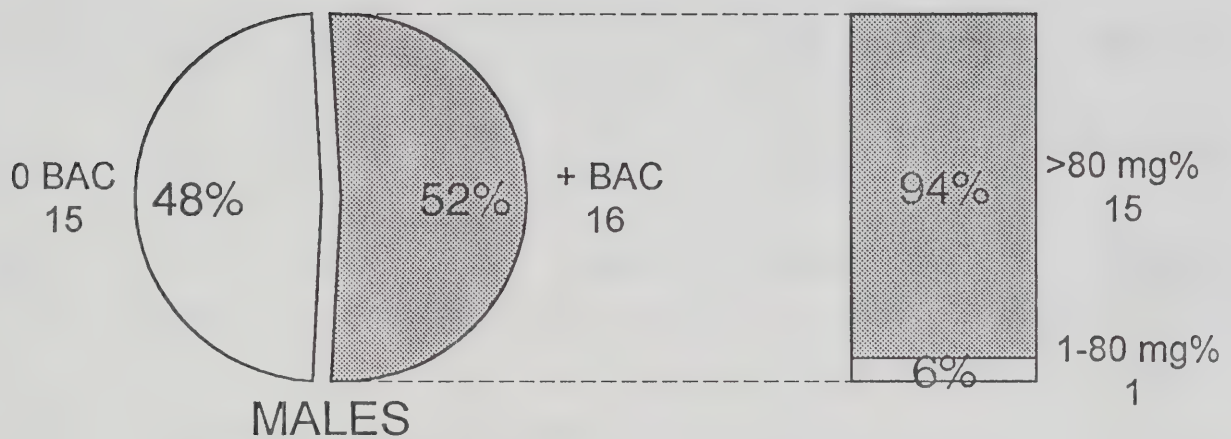
Alcohol Use Among Fatally Injured Drivers:  
Sex of Drivers  
(Nova Scotia, 1996)

SEX	Number Of Drivers*	Drivers Tested (% of total)	Drivers Grouped by BAC (mg%) (% of tested)				
			Zero	1-49	50-80	81-150	>150
MALE	45	31 (68.9)	15 (48.4)	1 (3.2)	0 (0.0)	2 (6.5)	13 (41.9)
FEMALE	12	10 (83.3)	8 (80.0)	1 (10.0)	0 (0.0)	1 (10.0)	0 (0.0)
TOTAL	57	41 (71.9)	23 (56.1)	2 (4.9)	0 (0.0)	3 (7.3)	13 (31.7)

\* Excludes operators of bicycles, snowmobiles, farm tractors, and other non-highway vehicles.



Figure 12-3  
Alcohol Use Among Male and Female  
Drivers: Nova Scotia, 1996



**Table 12-3**

Alcohol Use Among Fatally Injured Drivers:  
Type of Vehicle Operated

VEHICLE TYPE	Number Of Drivers*	Drivers Tested (% of total)	Drivers Grouped by BAC (mg%) (% of tested)				
			Zero	1-49	50-80	81-150	>150
AUTO	42	29 (69.0)	18 (62.1)	2 (6.9)	0 (0.0)	2 (6.9)	7 (24.1)
TRUCK-VAN	12	11 (91.7)	4 (36.4)	0 (0.0)	0 (0.0)	1 (9.1)	6 (54.5)
MOTORCYCLE	2	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
TRACTOR- TRAILER	1	1 (100.0)	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
TOTAL	57	41 (71.9)	23 (56.1)	2 (4.9)	0 (0.0)	3 (7.3)	13 (31.7)

**Table 12-4**

Alcohol Use Among Fatally Injured Drivers:  
Type of Collision

COLLISION TYPE	Number Of Drivers*	Drivers Tested (% of total)	Drivers Grouped by BAC (mg%) (% of tested)				
			Zero	1-49	50-80	81-150	>150
SINGLE- VEHICLE	32	26 (81.3)	11 (42.3)	0 (0.0)	0 (0.0)	3 (11.5)	12 (46.2)
MULTIPLE- VEHICLE	25	15 (60.0)	12 (80.0)	2 (13.3)	0 (0.0)	0 (0.0)	1 (6.7)
TOTAL	57	41 (71.9)	23 (56.1)	2 (4.9)	0 (0.0)	3 (7.3)	13 (31.7)

\* Excludes operators of bicycles, snowmobiles, farm tractors, and other non-highway vehicles.

Figure 12-4a  
Alcohol Use Among Drivers of Different  
Vehicle Types: Nova Scotia, 1996

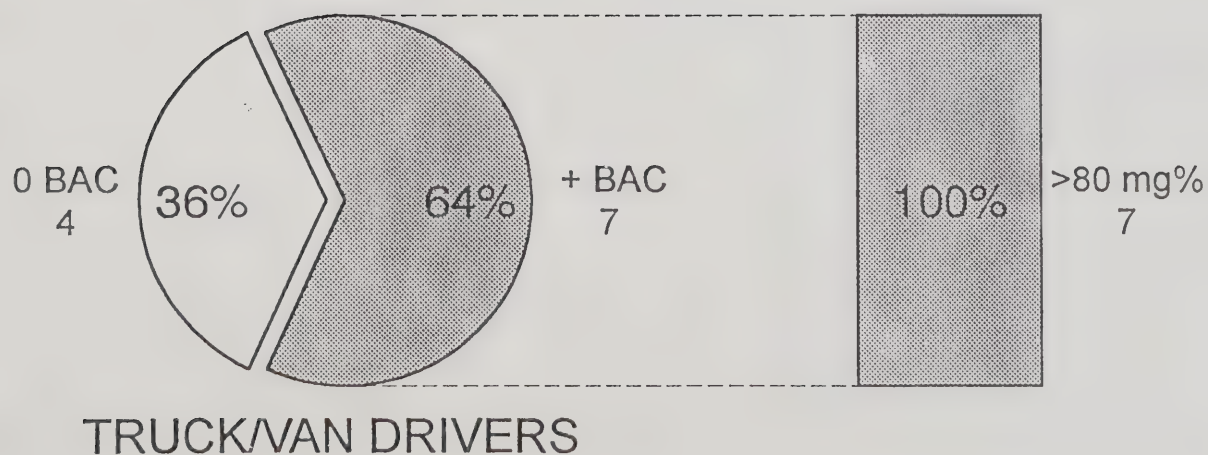
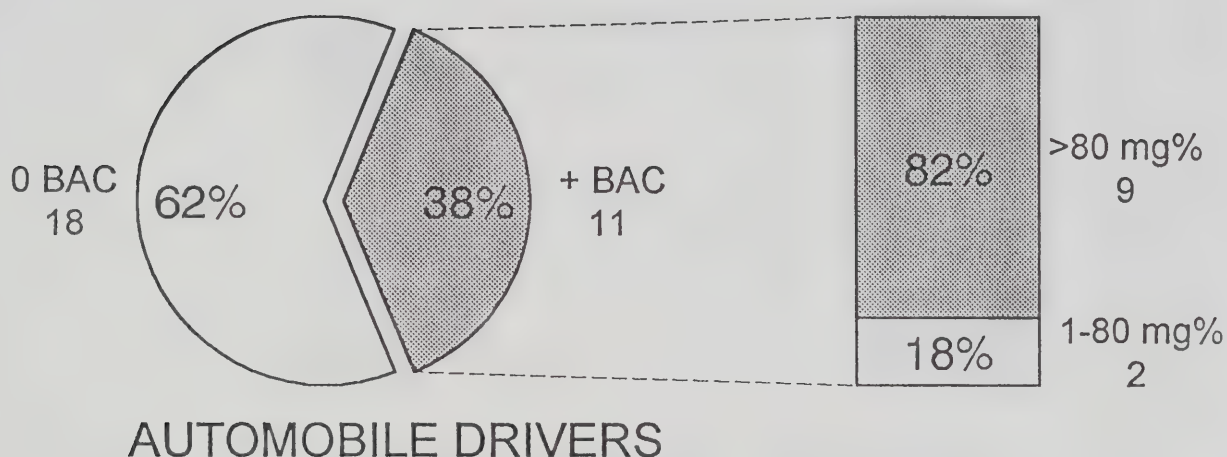
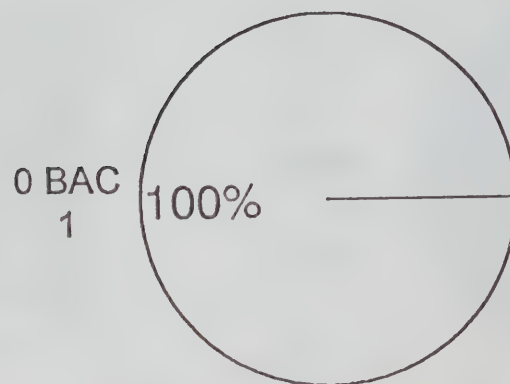


Figure 12-4b  
Alcohol Use Among Drivers of Different  
Vehicle Types: Nova Scotia, 1996



TRACTOR-TRAILER DRIVERS



Figure 12-5  
Alcohol Use Among Drivers: Type of  
Collision: Nova Scotia, 1996

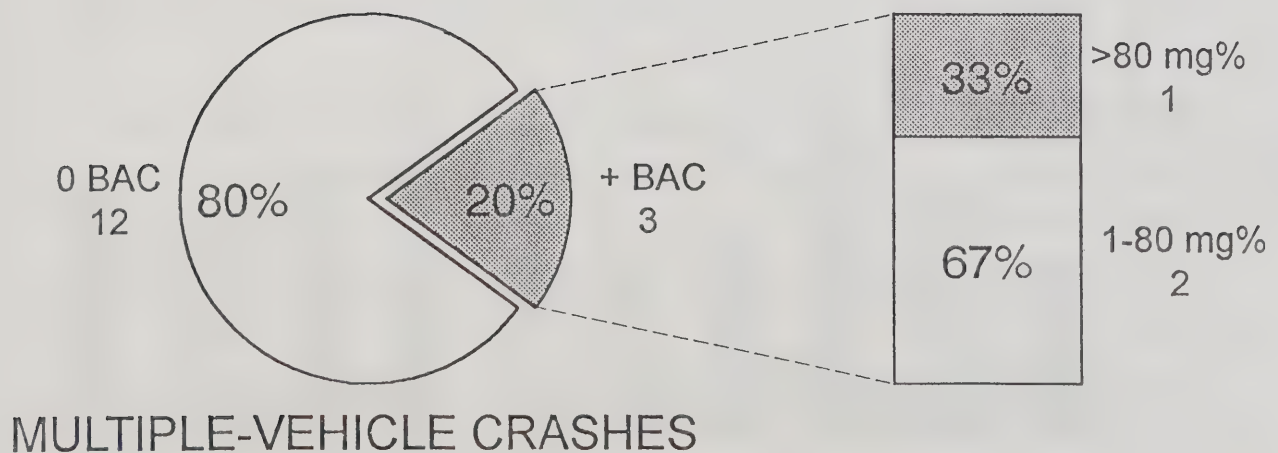
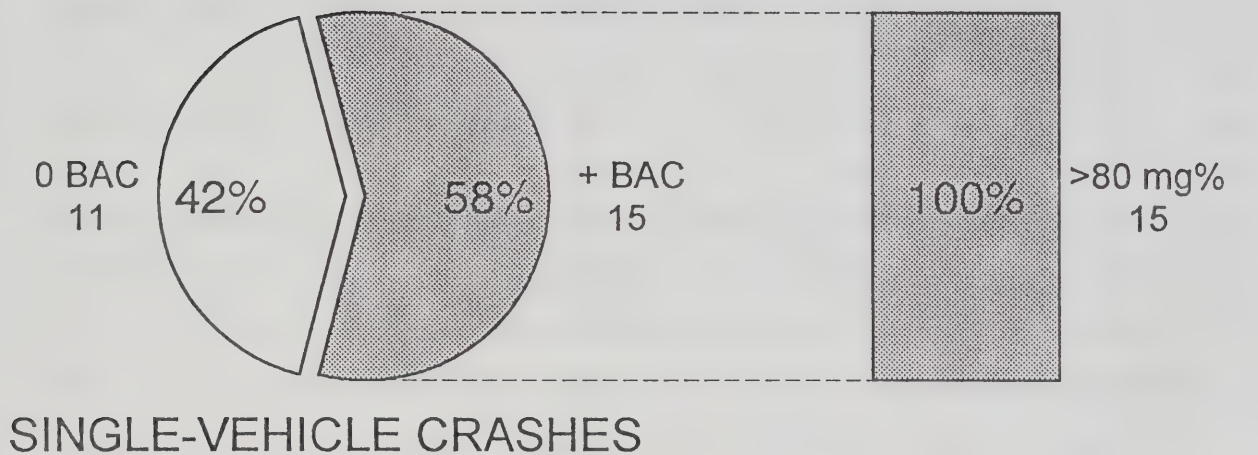


Table 12-5

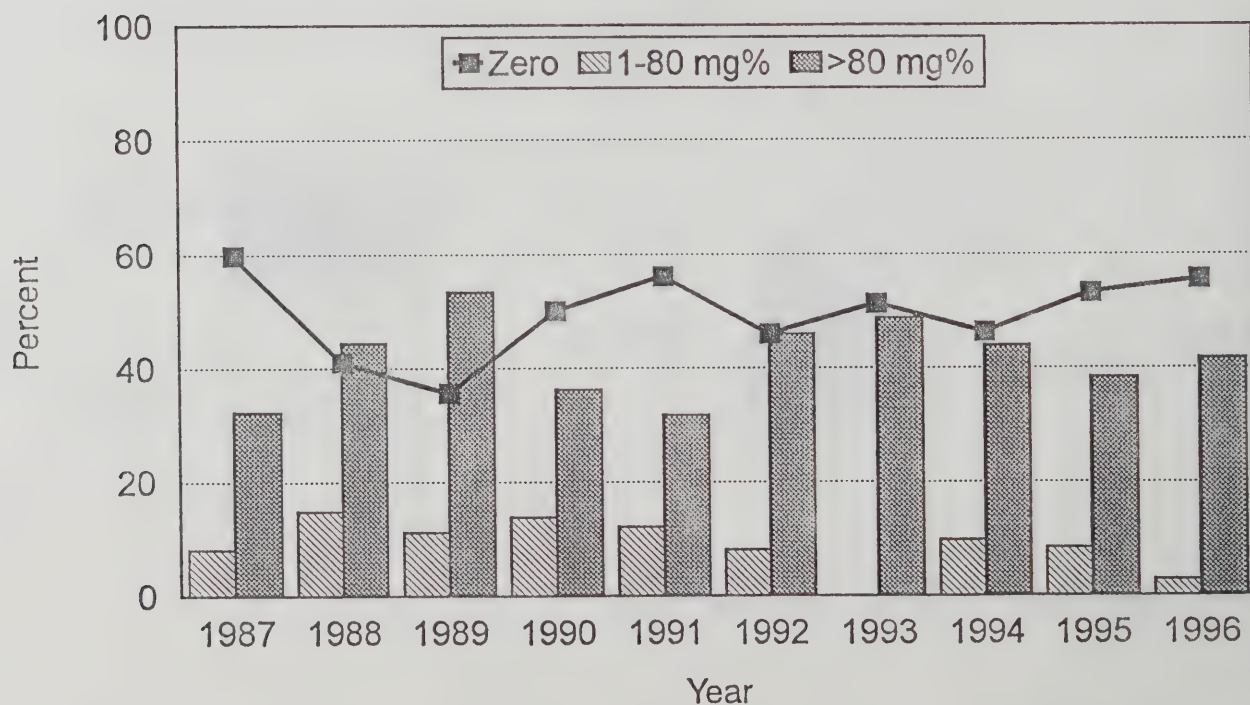
Alcohol Use Among Fatally Injured Drivers:  
Nova Scotia, 1987-1996

YEAR	Number Of Drivers		Drivers Tested (% Total)	Drivers Grouped by BAC (mg%)					
	Drivers*			Zero	(% Tested)	1-80	(% Tested)	>80	(% Tested)
1987	79	62	78.5	37	59.7	5	8.1	20	32.3
1988	85	61	71.8	25	41.0	9	14.8	27	44.3
1989	61	45	73.8	16	35.6	5	11.1	24	53.3
1990	67	58	86.6	29	50.0	8	13.8	21	36.2
1991	54	41	75.9	23	56.1	5	12.2	13	31.7
1992	53	37	69.8	17	45.9	3	8.1	17	45.9
1993	52	39	75.0	20	51.3	0	0.0	19	48.7
1994	50	41	82.0	19	46.3	4	9.8	18	43.9
1995	57	47	82.5	25	53.2	4	8.5	18	38.3
1996	49	36	73.5	20	55.6	1	2.8	15	41.7

\* dying in less than six hours.

Figure 12-6

Trends in Alcohol Use Among Driver  
Fatalities: Nova Scotia, 1987-1996



## 13.0 NEWFOUNDLAND AND LABRADOR:

### Alcohol Use Among Fatally Injured Drivers

This portion of the report contains a brief review of the major findings regarding alcohol use among drivers fatally injured in traffic collisions in Newfoundland.

The first section provides a review of general findings for 1996, and the second section examines trends in alcohol use among driver fatalities.

#### 13.1 GENERAL FINDINGS: 1996

Tables 13-1 to 13-4 contain the data on which the various figures in this section are based. Table 13-1 contains information on alcohol use by drivers of various age groups; Table 13-2 compares male and female drivers; Table 13-3 provides information on alcohol use by drivers of different types of vehicles; and, Table 13-4 shows alcohol levels found in drivers involved in single- and multiple-vehicle collisions. Figures are not provided owing to the small number of cases.

Each table shows the number of drivers killed, the number and percent who were tested for alcohol, and the results of those tests -- this includes the number and percent of the tested drivers who showed no evidence of alcohol as well as the number and percent who were positive for alcohol in each of four BAC ranges.

**13.1.1 Rates of Testing for Alcohol.** Newfoundland had a low testing rate in 1996 -- 72.2% of fatally injured drivers being tested for the presence of alcohol (see Table 13-1). This is lower than the Canadian average of 83%. *Due to the small number of motor vehicle fatalities in Newfoundland, the results should be treated with caution.*

**13.1.2 Incidence of Alcohol.** As the totals at the bottom of Table 13-1 indicate, among tested drivers in Newfoundland:

- o 46.2% showed no evidence of alcohol;

- o 7.7% had BACs from 1 to 80 mg%;
- o 30.8% had BACs from 81 to 150 mg%; and
- o 15.4% had BACs over 150 mg%.

Thus, 54% of fatally injured drivers in Newfoundland who were tested for alcohol had been drinking and most of these had illegal BACs.

*o Age.* Table 13-1 shows the incidence of alcohol among drivers of various ages. As can be seen, drivers age 36-45 were the least likely to be sober -- the one tested driver in this age group had been drinking. By contrast, the driver age 18-19 showed no evidence of alcohol.

*o Gender.* As shown in Table 13-2, most of the fatally injured drivers were males. Six out of ten (60%) fatally injured male drivers had been drinking. All of the male drivers who were drinking had BACs over the legal limit. Two out of three female drivers were sober. The one fatally injured female drinking driver had a BAC under the legal limit.

*o Type of vehicle.* Alcohol use varied as a function of the *type of vehicle* being operated, as shown in Table 13-3. Among fatally injured tested drivers, four out of eight (50%) drivers of automobiles, one of two motorcyclists (50%) and both drivers of trucks/vans had been drinking. The fatally injured tractor-trailer driver tested negative for alcohol. All of the fatally injured drinking automobile drivers had BACs over the legal limit, as well as the one motorcyclist. One of two fatally injured truck/van drivers (50%) who had been drinking had an illegal BAC.

*o Type of Collision.* Alcohol was found more often in drivers involved in single-vehicle collisions than among those involved in multiple-vehicle collisions (see Table 13-4). Some 58% of the drivers involved in single-vehicle crashes were positive for alcohol, while the fatally injured driver in a multiple-vehicle collision was sober. Six out of seven (86%) drinking drivers involved in single-vehicle collisions had BACs over the legal limit.



### **13.2 TRENDS IN ALCOHOL USE AMONG DRIVERS**

Data on alcohol use among fatally injured drivers from 1987 to 1996 are shown in Table 13-5. Due to the small number of fatalities each year, it is difficult to identify any trends.

**Table 13-1**

Alcohol Use Among Fatally Injured Drivers:  
Age of Drivers  
(Newfoundland, 1996)

AGE	Number Of Drivers*	Drivers Tested (% of total)	Drivers Grouped by BAC (mg%) (% of tested)				
			Zero	1-49	50-80	81-150	>150
18-19	1	1 (100.0)	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
20-25	3	3 (100.0)	1 (33.3)	0 (0.0)	0 (0.0)	2 (66.7)	0 (0.0)
26-35	7	5 (71.4)	2 (40.0)	1 (20.0)	0 (0.0)	1 (20.0)	1 (20.0)
36-55	2	1 (50.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (100.0)	0 (0.0)
>55	5	3 (60.0)	2 (66.7)	0 (0.0)	0 (0.0)	0 (0.0)	1 (33.3)
<b>TOTAL</b>	<b>18</b>	<b>13 (72.2)</b>	<b>6 (46.2)</b>	<b>1 (7.7)</b>	<b>0 (0.0)</b>	<b>4 (30.8)</b>	<b>2 (15.4)</b>

\* Excludes operators of bicycles, snowmobiles, farm tractors, and other non-highway vehicles.

**Table 13-2**

Alcohol Use Among Fatally Injured Drivers:  
Sex of Drivers  
(Newfoundland, 1996)

SEX	Number Of Drivers*	Drivers Tested (% of total)	Drivers Grouped by BAC (mg%) (% of tested)				
			Zero	1-49	50-80	81-150	>150
MALE	14	10 (71.4)	4 (40.0)	0 (0.0)	0 (0.0)	4 (40.0)	2 (20.0)
FEMALE	4	3 (75.0)	2 (66.7)	1 (33.3)	0 (0.0)	0 (0.0)	0 (0.0)
TOTAL	18	13 (72.2)	6 (46.2)	1 (7.7)	0 (0.0)	4 (30.8)	2 (15.4)

\* Excludes operators of bicycles, snowmobiles, farm tractors, and other non-highway vehicles.

**Table 13-3**

Alcohol Use Among Fatally Injured Drivers:  
Type of Vehicle Operated

VEHICLE TYPE	Number Of Drivers*	Drivers Tested (% of total)	Drivers Grouped by BAC (mg%) (% of tested)				
			Zero	1-49	50-80	81-150	>150
AUTO	11	8 (72.7)	4 (50.0)	0 (0.0)	0 (0.0)	4 (50.0)	0 (0.0)
TRUCK-VAN	4	2 (50.0)	0 (0.0)	1 (50.0)	0 (0.0)	0 (0.0)	1 (50.0)
MOTORCYCLE	2	2 (100.0)	1 (50.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (50.0)
TRACTOR- TRAILER	1	1 (100.0)	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
TOTAL	18	13 (72.2)	6 (46.2)	1 (7.7)	0 (0.0)	4 (30.8)	2 (15.4)

**Table 13-4**

Alcohol Use Among Fatally Injured Drivers:  
Type of Collision

COLLISION TYPE	Number Of Drivers*	Drivers Tested (% of total)	Drivers Grouped by BAC (mg%) (% of tested)				
			Zero	1-49	50-80	81-150	>150
SINGLE- VEHICLE	12	12 (100.0)	5 (41.7)	1 (8.3)	0 (0.0)	4 (33.3)	2 (16.7)
MULTIPLE- VEHICLE	6	1 (16.7)	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
TOTAL	18	13 (72.2)	6 (46.2)	1 (7.7)	0 (0.0)	4 (30.8)	2 (15.4)

\* Excludes operators of bicycles, snowmobiles, farm tractors, and other non-highway vehicles.



Table 13-5

Alcohol Use Among Fatally Injured Drivers:  
Newfoundland, 1987-1996

YEAR	Number Of Drivers*	Drivers Tested	(% Total)	Drivers Grouped by BAC (mg%)					
				Zero	(% Tested)	1-80	(% Tested)	>80	(% Tested)
1987	15	15	100.0	9	60.0	0	0.0	6	40.0
1988	20	13	65.0	4	30.8	2	15.4	7	53.8
1989	31	26	83.9	13	50.0	2	7.7	11	42.3
1990	24	20	83.3	9	45.0	5	25.0	6	30.0
1991	24	22	91.7	9	40.9	3	13.6	10	45.5
1992	18	13	72.2	5	38.5	2	15.4	6	46.2
1993	21	16	76.2	5	31.3	2	12.5	9	56.3
1994	12	10	83.3	5	50.0	0	0.0	5	50.0
1995	10	10	100.0	7	70.0	0	0.0	3	30.0
1996	18	13	72.2	6	46.2	1	7.7	6	46.2

\* dying in less than six hours.



## **14.0 NORTHWEST TERRITORIES:**

### **Alcohol Use Among Fatally Injured Drivers**

The Northwest Territories had only three fatally injured drivers in 1996. One driver was age 20-25 and the other two were age 36-45. All three drivers were males driving trucks/vans. Two of these drivers were involved in single-vehicle collisions.

Due to the small number of cases and the possibility of identifying an individual driver's BAC by referring to tables or text, no findings regarding BAC are available in this section.





## **15.0 YUKON TERRITORY:**

### **Alcohol Use Among Fatally Injured Drivers**

The Yukon Territory had only five fatally injured drivers in 1996. One driver was under 16 years of age and there were four age 16 and older. Three drivers were male and two were female. Four fatally injured drivers were operating trucks/vans and one was driving an automobile. All five drivers were involved in single-vehicle collisions.

Due to the small number of cases and the possibility of identifying an individual driver's BAC by referring to tables or text, no findings regarding BAC are available in this section.



## **APPENDIX A**

### **THE FATALITY DATABASE PROJECT: OVERVIEW DESIGN AND CONDUCT OF THE PROJECT**

## INTRODUCTION

Aims of this Appendix are threefold:

- o to outline the history of the Fatality Database;
- o to discuss the type and sources of information required for the database:  
and
- o to describe the design and conduct of the Fatality Database project.



## HISTORY AND DEVELOPMENT OF THE FATALITY DATABASE

The Fatality Database project began as a series of small studies done by TIRF in cooperation with coroners and medical examiners during the 1960s and early 1970s (Simpson, Page-Valin, and Warren 1978). From 1973 to 1975, TIRF carried out two national surveys: (1) a survey of all chief coroners (or their equivalent); and (2) a survey of most laboratories that analyzed post-mortem specimens for alcohol and other drugs (Simpson and Heayn 1976). Findings from these surveys showed that reliable data on alcohol use among persons fatally injured in motor vehicle accidents could be obtained from most jurisdictions in Canada.

Based on this research, TIRF launched a major investigation of alcohol involvement in fatal traffic crashes in 1976. During that study, TIRF obtained historical data on *14,000 victims in seven provinces* (Simpson, Warren, and Page-Valin 1977). In subsequent years, other studies allowed the collection of historical data from some provinces (pre-1974) as well as more detailed information on drivers, pedestrians, and crashes in which they died (Simpson and Warren 1979; Simpson, Warren, Page-Valin, and Collard 1978; Warren, Simpson, Collard, and Page-Valin 1977). By 1978, the process of up-dating provincial files had become routine.

Under two consecutive *three-year* projects sponsored by Transport Canada and Health and Welfare Canada, TIRF extended the database to include information from 1977 through 1982 (e.g., Haas and Donelson 1984). Transport Canada funded TIRF's collection of 1983 data. Since then to the present, Transport Canada and the Canadian Council of Motor Transport Administrators (CCMTA) have jointly sponsored this project (Haas et al. 1985; Donelson et al. 1986; Walsh et al. 1987; Donelson et al. 1988; Simpson et al. 1990; Mayhew et al. 1991; Mayhew et al. 1992; Mayhew et al. 1993; Mayhew et al. 1994; Mayhew et al. 1995; Mayhew et al. 1996, Mayhew et al. 1997).

Beginning in 1986, concerted efforts were made to include those jurisdictions from which data had not been gathered. In large measure due to the willing cooperation of coroners, medical examiners, and officials of transportation agencies -- and to additional funds provided by sponsors of this project -- this effort was successful. Beginning in 1985 Nova Scotia was added to the database and, in 1986, Newfoundland was added. For calendar year 1987, data were obtained from Quebec, the Northwest Territories, and the Yukon Territory. Files of the *Fatality Database* are now complete from 1973 through 1996 for seven provinces: British Columbia, Alberta, Saskatchewan, Manitoba, Ontario, New Brunswick, and Prince Edward Island. In all, data have been compiled on over 92,000 persons fatally injured in motor vehicle accidents since 1973.

### Requirements for Information: Sources and Types of Data

To up-date the Fatality Database each year, TIRF accesses two primary sources of information: (1) police-reported data on fatal motor vehicle accidents and (2) files in offices of coroners and medical examiners. In general, *both* sources must be accessed to obtain complete data on victims, crashes, vehicles, and toxicology. **A victim's name is usually the only link between these sources of information.** Whenever possible, police-reported accident data are obtained in electronic form; in some jurisdictions, however, the needed data are coded directly from standard, "hard-copy" reports prepared by investigating officers.

For most jurisdictions, permission to access files in coroners' offices is obtained. Manitoba's Office of Chief Medical Examiner, however, now provides computer print-outs to TIRF for direct entry of required information into the database. In Quebec, the Office of Chief Coroner provides needed data on a microdiskette. Offices of the Chief Coroner for the Northwest Territories and the Yukon Territory provide information by telephone. The process of collecting data is described in greater detail in the next section of this Appendix.

Figure A-1 lists data required for each case included in the database; **why** the information on these selected variables is obtained is described below.

## o Police-reported accident data

-- *police report number*: to link Fatality Database files to more comprehensive accident databases, both those maintained in the provinces and Transport Canada's Traffic Accident Information Databank (TRAID)

**Figure A-1**  
**Fatality Database: Requirements for Data**

SOURCE	DATA
o Police-Reported Accident Data (electronic or hard-copy reports)	o report number o victim name o victim age, sex o position of victim in vehicle (if occupant) o crash date, time o type of collision o type of vehicle(s)
o Coroners' Reports (including toxicology)	o victim name o victim age, sex o time of death o type of specimen o chemical test results (alcohol, other drug concentrations)

-- *victim name*: (1) to identify all persons fatally injured in motor vehicle accidents reported by police and (2) to link data from police accident reports to coroners' data

-- *position of victim in vehicle* (if occupant): (1) to identify type of victim (driver or pedestrian) and (2) to link coroners' data directly to person-based files in accident databases **without the use of confidential identifiers** (that is, without use of victims' names)

o Coroners' reports (including toxicology)

-- *victim name*: (1) to identify persons fatally injured in motor vehicle accidents not contained in traffic-accident databases and (2) to link coroners' data with police-reported accident data

-- *time of death*: to estimate elapsed time from crash to death, which is required for the interpretation of results of chemical tests

-- *type of specimen*: to interpret results of chemical tests

As indicated above, to carry out the Fatality Database project, it is necessary to obtain personal information on victims of motor vehicle accidents. By agreement with cooperating agencies in each province, TIRF maintains strict confidentiality of all information obtained on victims of motor vehicle accidents. In this context, the current sponsors of the Fatality Database (Transport Canada, Canadian Council of Motor Transport Administrators [CCMTA]), require TIRF to submit annual files on magnetic tape or diskette so that data can be linked to TRAID and provincial accident databases. This requirement obviates the need for TIRF to re-code accident data, which is already computerized; greatly reduces costs; and allows more detailed analysis of motor vehicle accidents involving alcohol. It should be emphasized that the yearly data provided to sponsors does not contain names of victims, only the minimum number of unique "identifiers" needed to link corresponding records between databases (for example, police report number or its equivalent). During the many years TIRF has maintained the Fatality Database, in no instance has the confidentiality of data been violated. Moreover, no person or agency has raised legal issues that compromised this project.



## DESIGN AND CONDUCT OF THE PROJECT

Because TIRF has managed the Fatality Database project and related studies for the past two decades, methods and procedures have become routine and increasingly efficient. As might be expected, wider use of computer technology has greatly facilitated many aspects of the data-gathering process. Nonetheless, occasional changes in provincial data systems demand that careful, *annual* attention be paid both to the design and to the conduct of this work. Foremost among considerations is maintaining **continuity of case files** for each jurisdiction and **comparability of data** over time and among jurisdictions. This section briefly describes how data for 1996 was collected for inclusion in the *Fatality Database*.

### Design of the Project: Definitions of Eligible Cases

The Fatality Database consists of "case files" (or *records*), each representing a person fatally injured in a motor vehicle accident. Two sources of information provide data for most case files: (1) reports of investigations by coroners and medical examiners, along with supporting documentation; and (2) reports prepared by police officers who investigated fatal motor vehicle accidents, including electronic data based on those reports. To create case files for the *Fatality Database* requires that these two sources of information be linked, a task that is not always straightforward. For example, commonly used definitions of "motor vehicle fatality" and "reportable accident" can produce less than complete overlap of police and coroner cases within a province.

Moreover, definitions of "fatal motor vehicle accident" used by transportation agencies also vary among provinces. In order to *standardize* collection of data and to include as complete a set of cases as possible in the *Fatality Database*, a motor vehicle fatality has been broadly defined as **any person dying within 12 months as a result of an accident involving a motor vehicle**.

This definition of "motor vehicle fatality" is more inclusive than those used by provincial transportation agencies. For example, a motor vehicle accident officially defined as "fatal" by transportation agencies depends on where the accident occurred and the time elapsed between the occurrence of the accident and the death of an involved person. Typical illustrations of motor vehicle fatalities excluded by transportation agencies are deaths involving farm tractors or snowmobiles occurring on private property and cases in which victims live longer than three to six months after their involvement in traffic crashes on a public roadway. The rationale for including such cases in the database is twofold: (1) "impaired driving" as a problem behaviour extends beyond the public highways; and (2) deaths due to impaired driving can be accurately counted only if virtually all victims of motor vehicle accidents are identified -- even if they live up to a year after the accident itself.

Motor vehicle fatalities not reported by provincial transportation agencies can be identified in provincial coroner and medical examiner files by using "type of death" classifications. Thus, numbers of case files in the database will be somewhat larger than those reported by provincial transport agencies. At the same time, it should be noted that the definition of "motor vehicle fatality" is *less inclusive* than criteria employed by coroners and medical examiners to classify "sudden or unexpected deaths". For example, cases have been encountered in which persons dying more than 10 years after involvement in a motor vehicle accident were considered traffic fatalities; many of these persons had died as a result of medical conditions attributable to crash involvement years before. In addition, some cases investigated by coroners each year involve heart attacks that occur while persons operate motor vehicles. These fatalities are certainly related to the operation of motor vehicles; however, the Fatality Database has traditionally been restricted to cases involving deaths resulting *from* motor vehicle accidents. Thus, the Fatality Database will include fewer case files than those categorized by coroners and medical examiners as involving motor vehicles.

## Conduct of the Project

The approach to creating 1996 case files was similar for each of the provinces included in the *Fatality Database*. There are four steps in the process:

- o **identification** of persons fatally injured in motor vehicle accidents;
- o **linkage** of sources of information on the victims and the motor vehicle accidents in which they were involved;
- o **collection** of data; and
- o **processing** of data.

Following past practice, cases were identified from police reports and police-reported data from provincial transportation agencies, thus ensuring the collection of data on virtually all reported "traffic fatalities". The general procedure was as follows. Names of victims and selected data reported by police were obtained and recorded using specially designed computer software. To complete capture of data for these cases, project staff accessed victim files maintained by coroners and medical examiners. Given characteristics and indexing of coroner/medical examiner files and police-reported accident data, the only means of initially linking these data sources continued to be the *name* of the victim. At provincial offices, staff members obtained toxicologic and other data, as well as complete data on other motor vehicle fatalities not identified through provincial transportation agencies.

The approach to collecting data differed somewhat from steps outlined above in some jurisdictions. Both Manitoba and Quebec were able to provide coroners' data directly to TIRF. And in Quebec, the Société de l'assurance automobile du Québec linked data from the coroner's files with their own police-reported data for 1996 -- 94% of the motor vehicle fatalities found on the coroner's files were successfully matched. In addition, staff of Alberta Transportation and Utilities coded police-reported data for our use in this project.





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